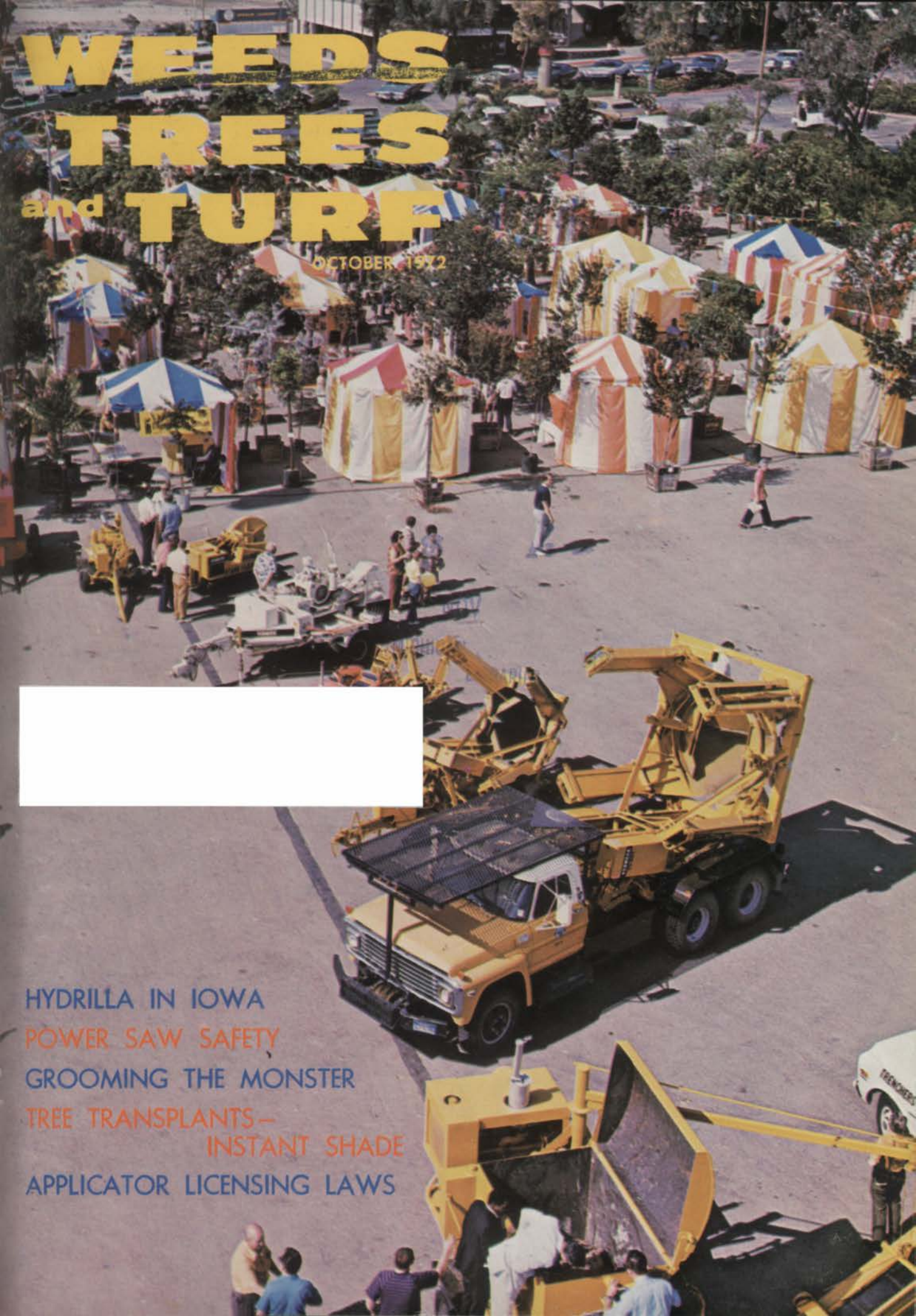
WEEDS TREES and TURF

OCTOBER 1972



HYDRILLA IN IOWA

POWER SAW SAFETY

GROOMING THE MONSTER

TREE TRANSPLANTS—
INSTANT SHADE

APPLICATOR LICENSING LAWS

Your third step to healthier turf

3 Fall is the time to take it

If you're following the Du Pont TERSAN 1-2-3 Disease Control Program, you've already got spring and summer turf diseases licked.

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TERSAN SP gives superior control of Gray Snow Mold and Pythium. These diseases will be the major problem, depending on your area, during the fall and early winter months.

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NOTE: Applications of Du Pont TERSAN 1991 turf fungicide should be used in the late fall and early spring in areas where Fusarium Patch (Pink Snow Mold) is a problem.

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With any chemical, follow labeling instructions and warnings carefully.

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TURF FUNGICIDE

WEEDS TREES and TURF®

Volume 11, No. 10 October, 1972

James A. Sample
Editor

Hugh Chronister
President

Arthur V. Edwards
Publisher

D. D. Langley
Director of Circulation

ADVERTISING SERVICES

Eric Lindsay
Advertising Production Manager
9800 Detroit Ave.,
Cleveland, Ohio 44102
Tel. 216+651-5500

ADVERTISING SALES OFFICES

Headquarters
Cleveland, Ohio 44102
9800 Detroit Ave./216+651-5500
Ext. 27

Chicago, Illinois 60601
333 N. Michigan Ave./312+236-9425
John Kielp

New York, New York 10017
757 Third Ave./212+421-1350
Russell Bandy

Cleveland, Ohio 44102
9800 Detroit Ave./216+651-5500
Roger Gilmore

Applicator Use Laws 8
A state-by-state breakdown of the application laws pertaining to professional applicators. This review is in two parts. If your not familiar with the laws in your state, keep this as a ready reference.

Power Saw Safety 11
This is the last of a series of three articles designed for the professional power saw user. Our topics covered included selection of a pro-grade saw, maintenance of your saw and safety to you the operator. Arborist Hank Harvey combines his experience and knowledge of tree work and power saws to present this informative safety article.

Grooming the Monster 12
It was the talk of the golf world during the exciting 54th PGA Championship. Superintendent Ted Woehrle of Oakland Hills Country Club, where the match was held, tells about the elaborate preparations necessary to make a course A-1 for a game. His ideas can be implemented on your course should have the opportunity to host a tournament.

Hydrilla In Iowa 14
It's official. Hydrilla has been found viable in Iowa by a 3M Company official. Here's a wrapup on this discovery and the findings by Robert D. Blackburn of the USDA research center in Fort Lauderdale, Fla.

Mature Tree Transplants 16
Golf superintendents were the first to benefit from the concept of instant shade. Now others are looking to tree transplants in landscape design with increasing acceptance. Ross Barnekow of American Tree & Landscaping Co. describes the advantages of mature tree transplants.

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The Cover

Come to the fair . . . with banners streaming, colorful tents and equipment displays. This was the festive atmosphere capured by our camera for this month's cover. Those who attended the recent meeting of the International Shade Tree Conference, Inc. will recall the warm, sunny hospitality of Southern California and the excellent display facilities for this year's meeting.

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Another fine product of Jacklin Seed Co., Inc.

Editorial — A Voice United

Organizations provide the life blood to individuals and businesses engaged in the same occupation. They have been popular since man began to diversify in his interest and goals.

Within the past decade or so, however, the trend among organizations has been to establish **interior** goals. Conventions and meetings have been held to perpetuate these interior goals in the form of reports on new discoveries of equipment, chemicals and the like, speeches by experts outside the industry to motivate the organization to accomplish a better job, and practical demonstrations by industry leaders to strengthen the industry's image among its members.

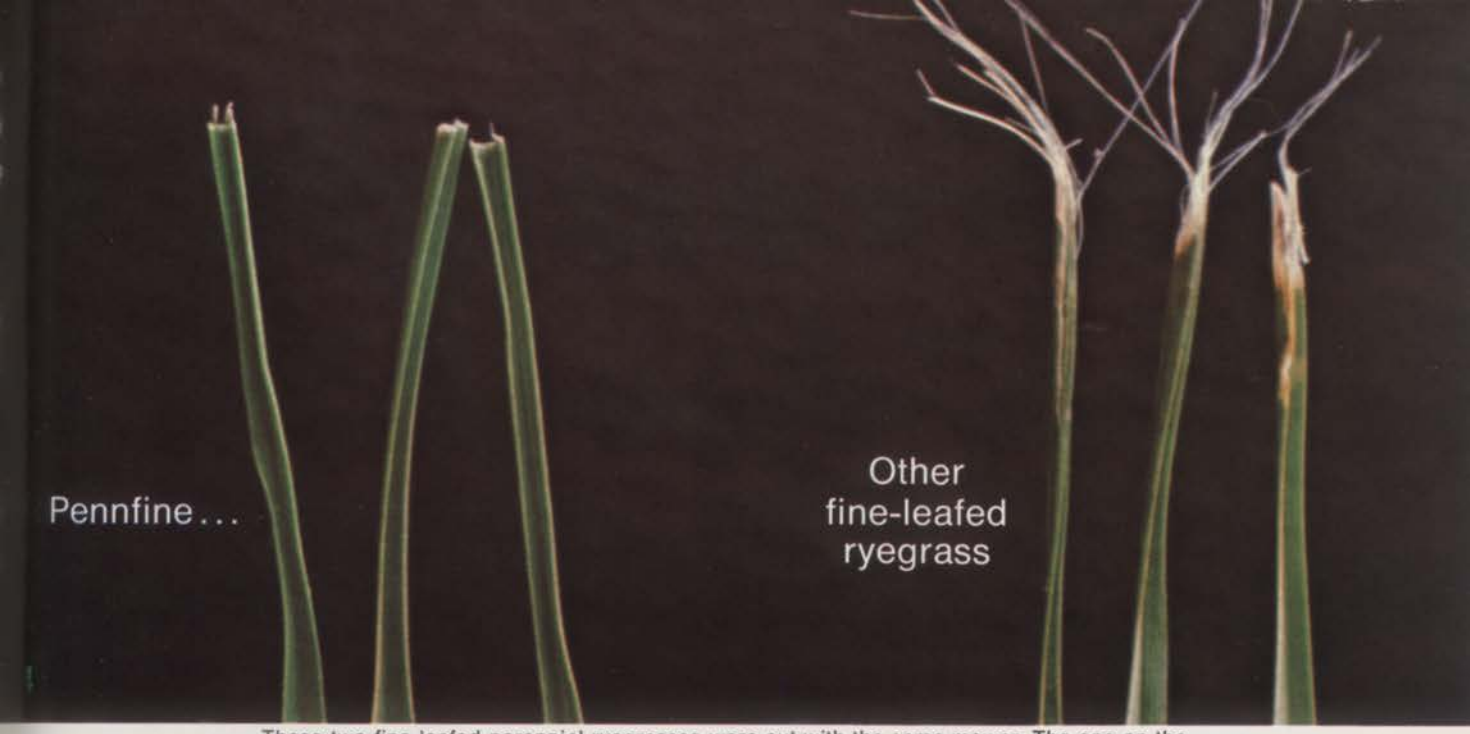
These interior goals have served a purpose and we believe they should be encouraged. But the climate of today's world is changing. Increased attention has been placed on environmental issues, the ecology, the examination of practices and procedures by congressional investigative subcommittees and the enactment of laws not always in the best interest of the organization. Thus, these outside influences can and do shape the interior goals of an organization.

What can be done? "Green Industry" organizations must consider with increasing attention **exterior** goals that promote and educate Americans outside the realm of the organization's members. Think for a moment about an organization to which you belong. Does it in its constitution, charter, by-laws or elsewhere contain an operational policy statement that fully describes the job functions of the various members? If it does, could this statement represent this segment of the industry and be used as testimony in the rigid questioning of a Senate hearing.

Furthermore, who outside of our immediate industry has heard of your particular organization? Our editorial for August charged that even the ubiquitous USDA neither sought the counsel nor the advice of most of the important organizations of our "Green Industry" in preparing the 1972 Yearbook of Agriculture.

Exterior goals needed by every organization include policy statements that define the activities of members by job description and function, and a broad public relations program to familiarize others with what is being done. Our organizations could take a tip from organized industry and labor who make it a practice to routinely keep outsiders in tune with practices, programs or union demands.

"Green Industry" organizations have the potential solutions to many of the problems confronting the U.S. today. All we need to do is organize our **exterior** goals.



These two fine-leafed perennial ryegrasses were cut with the same mower. The one on the right shows the fibrous "paint brush" top which is characteristic of ryegrasses. Pennfine, on the left, took a smooth, even cut because it was bred for softer, easier to cut fibers.

Pennfine: the clean-cut perennial ryegrass.

All the new fine-leafed perennial ryegrasses are beautiful. Until the mower comes along. That's the moment of truth for ryegrass. And Pennfine is the fine-leafed perennial ryegrass bred specifically for mowability. You can see the clean-cut look of Pennfine in the photo above. You'll see it in your turf, too.

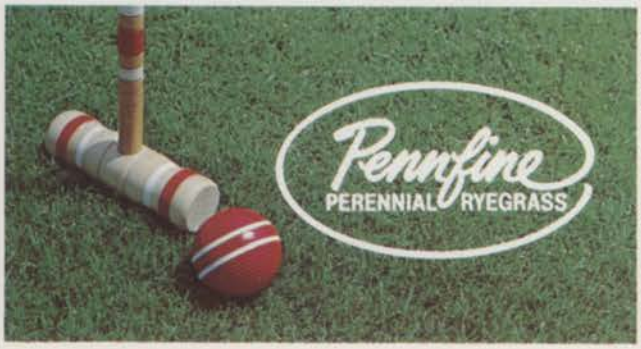
Pennfine vs. other fine-leafed ryegrasses

Developed and released by Pennsylvania State University, Pennfine is the best of the fine-leafed perennial ryegrasses. That's the finding of the trials at University Park, Pennsylvania. Among nine cultivars, Pennfine ranked first in texture, first in density, first in decumbency (low growth), first in tolerance to snowmold and leaf spot. And, of course, first in mowability.

Pennfine mows 'em down

The remarkable mowability of Pennfine — the result of breeding specifically for soft fibers — is demonstrated in the above photograph. It was also proven by the University Park trials. Over a five-year period, Pennfine averaged 8.3 (of a possible 10) in mowability. The next best score was 7.3, and the other cultivars rated considerably lower.

With the finest blade of all the fine-leafed ryegrasses tested, Pennfine is beautiful to begin with. And, because of superior mowability, it stays beautiful. It's also highly compatible with Kentucky Bluegrass, both in terms of appearance and management requirements. If you'd like more information on this clean-cut perennial ryegrass, just send in the coupon.



TO: **Pennfine Perennial Ryegrass**
P.O. Box 923, Minneapolis, Minnesota 55440

Please send me technical information on Pennfine Perennial Ryegrass. ☐ Names of Distributors. ☐

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Club or Company_____

Address_____

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Government News / Business

Ackley Manufacturing Company, Clackamas, Ore. has been purchased by The Stanley Works, New Britain, Conn. Ackley will be operated as a wholly owned subsidiary.

The Ohio Agriculture department has filed charges against a tree surgeon for operating without a license. The charge stems from a complaint of a customer to the local newspaper consumer column about an unsatisfactory spraying job. When a reporter called the agriculture department, he was told the arborist did not have a license. The arborist admitted he had no license, but said no one else in the town of over 100,000 had one either. Conviction could bring a fine of up to $200 on each count under the use and application act.

The flood of east coast recreational vehicles to the midwest and western states this year has brought good news and bad news to area residents. First the good news. Tourist trade boomed. Now the bad news. Gypsy moth invaded areas that heretofore were geographically immune to this marauder. Latest area to be hit is Iowa's Rock Creek State Park. Other first timers include Tennessee and West Virginia.

New Jersey joins a growing number of states to establish a department of environmental protection. Like others, this department grew out of the bureau of water pollution control -- some states have combined the commissions of air, water and natural resources into a department -- and now has the capability of dealing with the ever-growing problem of polluted rivers, streams and groundwater. Watch for increased activity at the state level from these new departments.

The Cost of Living Council has reversed an earlier ruling and has now exempt nursery stock from all price controls "after the first sale by the grower." American Association of Nurserymen President Kenneth J. Altorfer says that action by AAN was largely responsible for the reversed decision. The Council agreed with AAN that any individual firm might grow part of what it sells and buy a part, and it is neither practical nor useful to attempt to control only the price of the purchased portion. Thus, all sales of growing nursery stock are exempt from price controls.

Congressional leaders on the Labor Department Appropriations Bill have attached a rider that bars use of Federal funds to inspect establishments with fewer than 15 employees until June 30, 1973. The President has vetoed the bill and the House has upheld the veto. At presstime, the bill has been referred back to the House committee to refigure the proposed expenditures. It may be only a matter of time before the rider becomes law. If it does, there will probably be a grace period for most operators.

the Ditch Witch building-block concept begins with these versatile handlebar units.

Three compact Ditch Witch units provide a solid foundation for the Ditch Witch building-block concept of trenching! They're small and compact, yet they're fully self-propelled to deliver big-machine performance on the job. The 7- to 9-HP **C-Series** delivers the lowest cost-per-foot of trench of anything in its class . . . it's so compact it slips through any standard yard gate with ease —and one man can easily load it into compact van or pick-up.

The **M-Series** offers 9- to 12½-HP, and is available in a track-mounted crawler model. With three digging speeds, plus reverse, it delivers as many feet of trench per hour as bigger competitive models costing twice the price.

For utility service installations, you can't beat the **VP12 Vibratory Plow,** with 25-HP capabilities and full hydraulic control. Install service lines or sprinkler systems without trenching, without costly restoration to expensive turf.

Compact, rugged and economical — Ditch Witch handlebar units provide the solid foundation for your entire trenching operation. Let us tell you more about our full line . . . or ask your Ditch Witch man to give you a free demonstration!

MODEL C

MODEL M

MODEL VP12

Build from the bottom by starting at the top...

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APPLICATOR USE LAWS

A SIGNIFICANT tightening of pesticide use and application laws nationwide has taken place since our last report. (See WTT, April 1970, p. 10). In an effort to create order from disorder, state legislative bodies have been busy passing bills that more specifically define the generalities of existing laws or amending existing laws to a point that a new statute is born.

While it may be noted that this tightening has put more teeth in state administrative programs, the general impression obtained in reviewing state laws is that the Federal Environmental Pesticide Control Bill when passed will contain all the muscle through which the teeth derive their power.

However, states have not been standing idly by waiting for Federal legislation to take place. Most state administrators realize that the Federal Bill is designed around the commercial licensed applicator. The mandate will dictate certain requirements with which all states will have to comply.

Thus, there has been a flurry of activity to license commercial applicators. Additionally, all but two states now have pesticide registration laws. Often referred to as "economic poison laws" or "insecticide, fungicide and rodenticide acts," these laws regulate the production and marketing of pesticides by requiring compliance with registration and labeling criteria prior to interstate or intrastate shipment.

In many cases, use and application laws for the contract applicator are divided into three groups. One requires the examination and licensing of persons engaged in applying pesticides; another regulates persons in professions; and a third would prohibit or restrict the use of certain pesticides.

It is interesting to note that this latter category has received increasing attention by state control groups. Like the movie industry, these groups have determined that certain pesticides should have an "X" rating or "restrictive use" rating. Thirty states currently either restrict, or have the authority to restrict, the sale and use of certain designated pesticides.

At presstime, only 12 states have no pesticide use and application law regulating the custom application of pesticides. Part of these 12 have established a permit system or require applicators to register with the state. Thirty-eight states require custom applicators to obtain licenses.

This report was prepared with the aid of the Division of Pesticide Community Studies, Office of Pesticides Programs, Environmental Protection Agency. The following is a state-by-state breakdown on the use and application laws for commercial applicators:

ALABAMA

First use and application law became effective January 1, 1972. It requires examination and licensing of persons who engage in the business of custom application of pesticides. A surety bond must be furnished and the Commissioner of Agriculture and Industry is authorized to prescribe rules and regulations governing materials and methods of application, discarding of pesticides or pesticide containers, keeping of records and other regulations. The act exempts governmental bodies, structural pest control operators and certain other control activities related to premises.

ALASKA

Under the new Department of Environmental Conservation, authorization is provided to license persons "engaged in the custom commercial or contract spray-

ing or application of pesticides and broadcast chemicals including the requirement of a surety bond and liability insurance for the licensee." Application of banned agricultural chemicals is prohibited.

ARKANSAS

Although the Arkansas Agricultural Application Service Act does not specify qualifications for licensing, the state plant board administers the act and sets standards for qualifications and application. Of perhaps more relevance to the "Green Industry" is the Arkansas Pest Control Law. It regulates tree surgery, spraying shade trees and shrubs, and termite and other structural pest control. Additionally, the Economic Poison Act has special restrictive regulations regarding the use and application of hormone-type herbicides.

ARIZONA

To obtain a license in this state an applicant must satisfy the Board of Pesticide Control as to character, qualifications, responsibility and good faith. Exemptions to having a license include airplane pilots on a temporary basis during emergencies, application of fertilizers or seeds, governmental bodies, weed control on railways, highways, canals, or utility easements. Violations to the Arizona Pesticide Use and Application Act, the law governing pesticide use, constitute a misdemeanor subject to a fine of not less than $100, nor more than $1,000, or imprisonment of not over 90 days, or both fine and imprisonment.

CALIFORNIA

Use laws are applicable for nearly every conceivable type of pesticide application. The California Agricultural Code specifies aircraft operation regulation, agricultural pest control agents and pesticide dealers are subject to the state ordinances. Applicators and dealers must pay $50 yearly for a license; pilots are charged $25 (renewal $15); and, agents are not charged a fee. In each case, however, a written examination is required.

California Assembly Bill No. 327, approved October 5, 1971 amends the economic poison law by adding a new paragraph making it unlawful ". . . for any person to store, transport, handle, or dispose of any economic poison, or any container which holds or has held such economic poison, except in compliance with rules and regulations of the director . . ."

In another bill approved on October 19, 1971 the Agricultural Code was amended by making it unlawful to act or offer to act as an agricultural pest control adviser without being licensed or without having registered as prescribed. It also required that the permit to use any pesticide for agricultural use be obtained from the county agricultural commissioner. Further it made it unlawful to sell or deliver any "restricted material" without a permit.

COLORADO

Be prepared for both an oral and written examination to get an applicator's license in this state. However, exemptions include applicators of fertilizer and soil conditioners, persons applying pesticides on their own or controlled property, occasional applicators working on adjacent property and structural pest control operators. One interesting note is that your license may be restricted to certain types of equipment or materials. A reexamination is also required each year.

CONNECTICUT

All matters relating to the preservation and protection of the air, water and other natural resources of the state have been delegated to a Department of Environmental Protection. This includes the application of pesticides. Custom ground application of pesticides or application of pesticides or fertilizers by aircraft can be accomplished only by licensed applicators. Tree experts are covered under the Tree Expert Law which requires licensing of persons who contract to improve the conditions of trees (including spraying to control insects or diseases).

DELAWARE

While a license per se is still not required in this state, House Bill No. 35, approved June 25, 1971, adopts a uniform pesticide registration law. The act authorizes the secretary of the department of agriculture to prohibit the sale of a restricted use pesticide to any person other than the holder of a valid use permit. The use permits are limited to the area, time, amount and rate of application, and related factors. Thus, in a sense, the use permit serves as a license to the applicator.

FLORIDA

According to the Florida Pesticide Law, application of non-restricted pesticides may be accomplished without a license. But, it is unlawful to sell or purchase a "restricted pesticide" without a valid license or permit. Further, to use or dispose of a restricted pesticide, except in a manner authorized by the permit and according to label directions, is also prohibited. The Pest Control Act, administered by the Florida State Board of Health, relates to control of pests in structures, lawns, ornamentals and nonagricultural environments. It would be good to become familiar with this Act.

(continued on page 22)

California Law Further Explained

Walter Bray, president-elect of the California Landscape Contractors Association reports that the state legislature continues to pass legislation to make it more difficult for licensed operators to make a living as contractors.

On July 1, 1973, license numbers will be required on all contracts, subcontracts, calls for bids, and various form of advertising. This bill was first introduced as SB - 239. Governor Reagan has now signed the bill into law. It is incorporated into the Business and Professions Licensing Code as Section 7030.5.

The governor also has signed SB-1088 to prohibit suppliers from selling their products or services to unlicensed operators. The crux of the legislation was to prevent the continued abuses by unlicensed individuals, who purchase their materials for illegal work at the same prices as legitimate contractors.

A third bill to become law 60 days after the legislature adjourns is SB-247. This Act will authorize stiffer penalties for unlicensed operators convicted for the second time of operating without a license. It will force district attorneys to take action against anyone who has prior conviction of operating without a license.

How to control weeds and costs at the same time.

In industrial applications, as shown here, Tandex controls weeds along fence lines, parking areas, ditches, pipelines, sidings, storage areas, tank farms, and sign posts.

Weeds are expensive.

They are everything from a fire hazard to a haven for unfriendly rodents.

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The weed onslaught is particularly damaging to such operations as railroads, utilities, oil fields and highways, as well as general industry.

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Tandex—what it is and what it does:

Tandex is a urea-carbamate compound that's demonstrated exceptional control over weeds, grasses, vines, brush and the hard-to-kill woody species.

Tandex does its weed-killing job by being absorbed through plant roots.

Once applied, Tandex can last a whole season, or longer. Yet it's relatively non-hazardous to man, animals or fish.

A distinct advantage of Tandex is its stability in the soil. Put another way, this means it has minimum lateral movement—which reduces the danger to nearby trees and shrubs you *don't* want to lose.

Tandex can be sprayed or applied in dry granular form. It can also be combined with other herbicides for special control situations.

For more information, write to Industrial Chemicals Dept., Niagara Chemical Division, FMC Corporation, Middleport, New York 14105.

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It gets to the root of weed problems

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LAST OF A SERIES

Power Saw Safety

By HANK HARVEY, JR.
Arborist
Rutledge, Pennsylvania

LAST week my buddy bought a brand new light-weight power saw and was using it for the first time in a tree. Unfortunately, it slipped out of his hands. Fortunately, he had a power saw holdingstrap. Unfortunately, he hadn't installed it yet. The saw fell about thirty feet and hit the groundman on the head. Fortunately, he had just been issued his OSHA-approved safety hat. Unfortunately, it was still in the truck. Fortunately, this is just a story. Unfortunately, it could well be true.

While nearly everyone who uses or has used a power saw realizes they are a dangerous tool, it's doubtful that many realize just how very dangerous they actually are. In a tree or on the ground, running or not. The many dangers that power saws pose, present or potential, merit greater consideration than most saw operators give them.

ON THE GROUND

Overall, most power saw work is done on the ground. Therefore, just on the basis of manhours spent cutting, the greatest danger of a power saw accident exists to ground workers. What are the greatest hazards? There are many. But the following present the greatest danger to power saw users on the ground:

SAW KICKBACK — That is when saw jerks or kicks back suddenly or unexpectedly. It could also be when the saw makes a branch or piece of wood kick back at the operator. Because kickback **is** sudden and unexpected, it can cause operator to lose his grip on the saw and either drop it or have it thrown towards him, in either case possibly causing serious injury or death. Kickback can be prevented by always paying careful attention to what you are cutting and what is behind it or under it. *AND* by having a good, firm grip on the power saw at all times. A loose, sloppy chain can also cause kickback, so it is wise to always keep it properly adjusted.

TREE FELLING — This is the actual take-down or dropping of trees. It is nearly always done with a power saw. And it is very dangerous. An improperly felled tree can go the wrong way or spin off the stump, thus seriously hurting or killing the saw man. Tree felling should be learned by watching an expert do it and having him explain the procedure. But there are several booklets which explain the fundamentals. One is offered by Homelite at most of the dealers. Another is *All About Using Chain Saws* from Omark Industries and can be obtained where Oregon Chains are sold, for $1. Another is *Chain Saw Operation,* available free from the Public Relations Department of McCulloch Corp., 6101 W. Century Blvd., Los Angeles, California 90045. Two essentials things to remember about safety when felling trees is 1) Always have a clear work area and escape route in the opposite direction of the tree

(continued on page 30)

Various publications on proper and safe use of power saws are available from saw and chain manufacturers.

Many accidents occur when first starting saw. Make sure you have a firm grip before pulling starter.

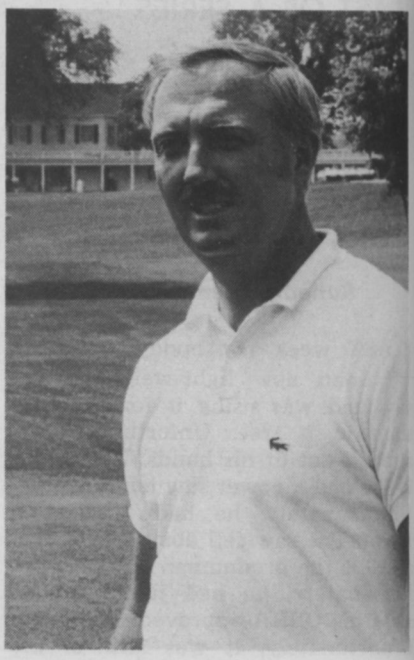
Chain that's too loose can cause saw to "kick back" dangerously. Check chain tension before each use.

"Just a touch" from a moving chain, even when saw is just idling can cause a vicious cut like this.

Exercise extreme care when cutting up in brush. Small twigs and branches make tripping dangerously easy.

When felling any trees, even small ones, make sure you have a clear work area, and a pre-determined "escape route."

Grooming The Monster



Ted Woehrle is superintendent at Oakland Hills Country Club, Birmingham, Michigan, where the 54th PGA Championship was held in August.

PREPARING "the Monster" for the 54th PGA Championship was the responsibility of Ted Woehrle, Superintendent at the prestigous Oakland Hills Country Club in Birmingham, Michigan.

Oakland Hills' south championship course, ranked among the nation's toughest and dubbed "the monster" by the venerable Ben Hogan, was made even tougher for this year's tournament. Those who viewed the PGA Championship on national TV witnessed "the monster" take a toll of leading money-winners.

Woehrle's preparation of the course had much to do with the success of this $225,000 golfing challenge, and a great deal more to do with the smooth execution of the entire tournament.

In preparing the course for the July 1 — August 6 PGA assualt, Woehrle tried a number of ideas suggested by the experiences of other superintendents, while developing his own overall "game plan". For "instant reply", here are some of the approaches Woehrle took and during the week-long proceedings.

Months ahead of the tournament, telephone and TV people made it known they needed two telephones for each hole. One phone would be located at each green for official scorekeepers, while the second phone, spotted at the 250-yard marker, would be used by broadcasters to relay information about the holes not actually covered by TV cameras.

To set up the phone system, nearly 30,000 feet of telephone wire had to be strung around the course. How to do it was the problem.

"At first, there was thought of installing phone lines permanently," said Woehrle, "but the cost of trenching and installation was extremely high, and they (telephone engineers) wanted to know if there was a better way."

Woehrle suggested he could take up a piece of sod with a sod cutter, lay the wires about two inches in the ground, and flop the sod back over the wires. "The only thing that bothered me about doing this," Woehrle recalled, "was the large scar sod removal would leave, so I cut off part of the sod cutter to take up a narrower piece and moderately curved the blade to make more of a crease under the sod."

The idea worked perfectly. The wire laying operation was completed five weeks ahead of the tournament, and when play began, nearly all the scars left by the operation had grown over.

After the championship was over, the wires were removed simply by pulling them up by hand, again leaving only a small, fast-healing scar.

Healing the scars left by the galleries totalling more than 114,000 people was still another problem for Woehrle. His solution actually began before the tournament practice rounds.

"We were not concerned about damage to the fairways, even from galleries this big," commented the superintendent. "People don't do

(continued on page 20)

Ted Woehrle's "modified" sod cutter was the method used to lay nearly 30,000 feet of telephone wire around the Oakland Hills course. The wires were put about two inches below the surface to protect them from spiked shoes often worn by people in the gallery. The scar left by the sod cutter had grown over by the time the tournament had started.

Emergency? Call Davey for fast service.

In these days of tight budgets, you can't be staffed and equipped at all times to handle tree problems caused by high winds and severe storms. So do the next best thing. Call Davey.

We'll get a crew to the scene in a hurry to remove fallen trees and broken branches. They'll clean up the trouble — and clean up the area.

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We're listed under Tree Service in the Yellow Pages. Give us a call, and meet the men who represent Davey in your area. If you can start saving on tree services right away, why wait for an emergency?

DAVEY TREE

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Coast to Coast and Canada

For More Details Circle (123) on Reply Card

HYDRILLA IN IOWA

A SMALL, unobtrusive pond in eastern Iowa is home base for a thriving aquatic weed that previously was known to inhabit only southeastern U.S. subtropical climates.

Hydrilla has been positively identified less than a mile from the Mississippi River near Davenport, Iowa.

The discovery of this hard-to-control aquatic weed sheds new light on the adaptability of this species to foreign environments.

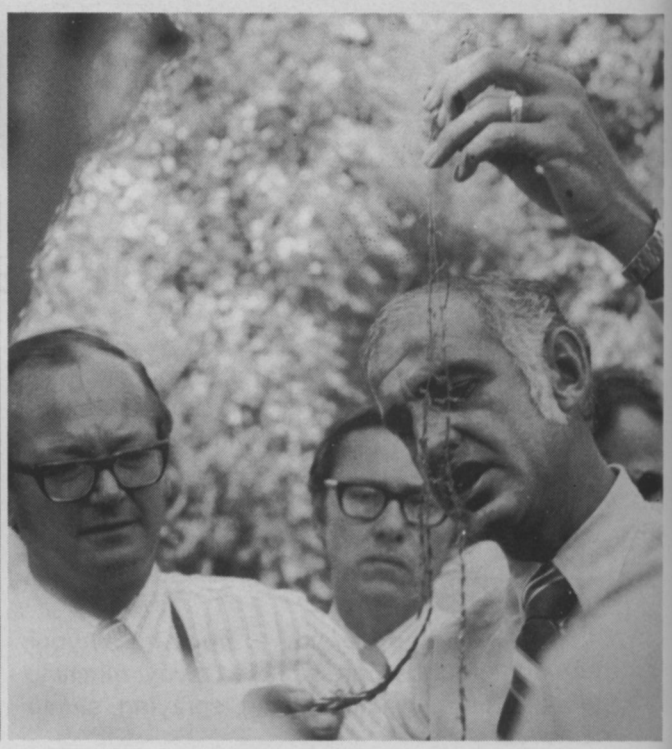
How did the Hydrilla get to Iowa? The only explanation available is that a small piece of Hydrilla apparently rode the coattails of a water hyacinth shipment ordered by pond owner, Pete Riehle.

"The area around here was developed by Dr. J. R. Shorey, a local physician," said Riehle. "He ordered hyacinth every year to add color and beauty to the pond. When we moved here the practice was continued. Apparently Hydrilla was carried in with the hyacinth."

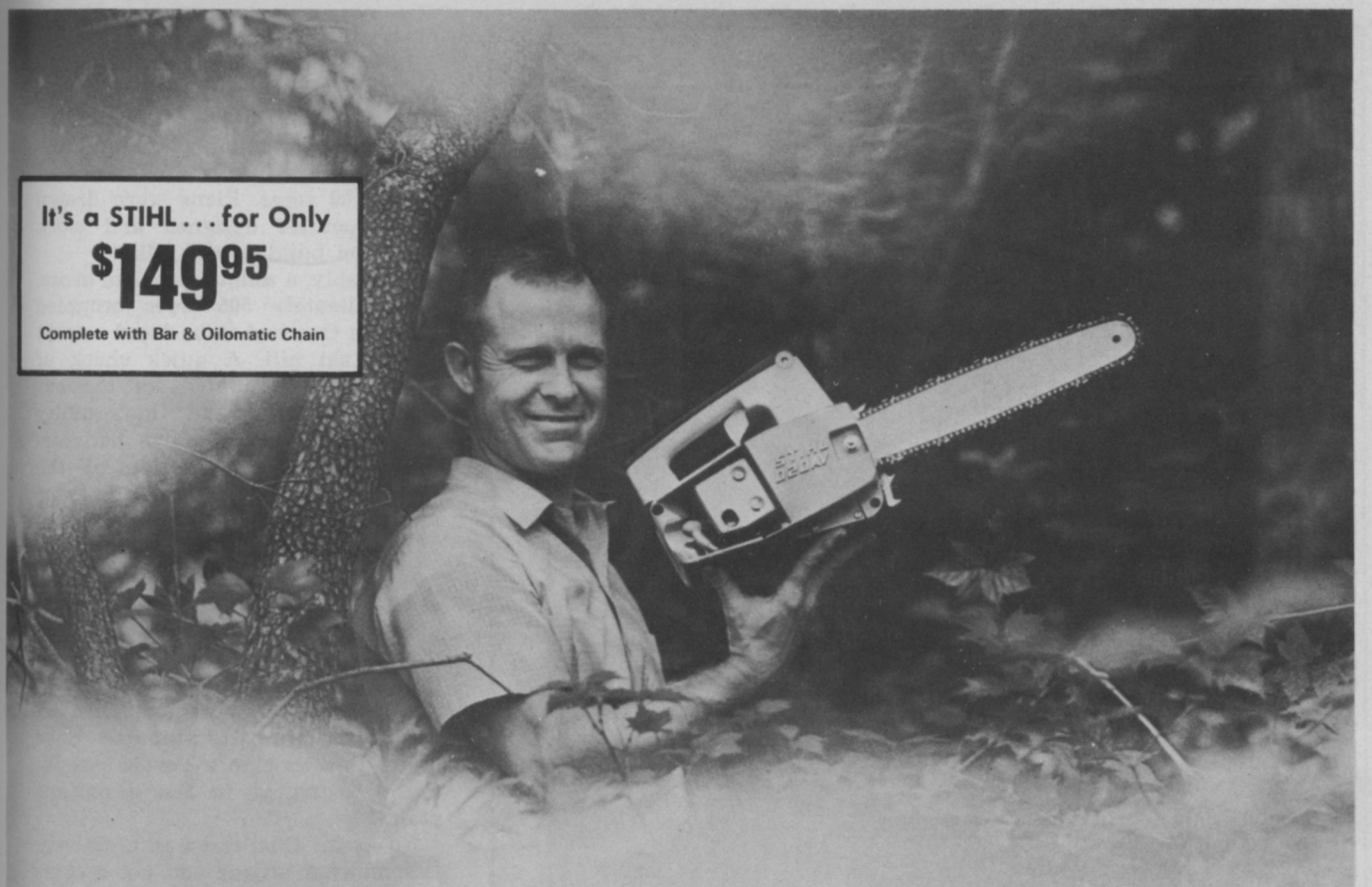
Earlier this year Riehle, who is a production superintendent for 3M Company, sent a sample of the weed to 3M headquarters for identification, after attempting ot control it with little success. In St. Paul, Dr. William Paterson, manager environ-

(continued on page 36)

Dr. William G. Paterson, (l) manager, environmental products project, 3M Company, examines strands of hydrilla with Robert D. Blackburn. Blackburn is considered a world authority on aquatic plant life. He is with the USDA Research Center in Fort Lauderdale, Fla.



Dr. Robert Geiger, manager of 3M's lakes and waterways management service, Pompano Beach, Fla. and Robert D. Blackburn discuss hydrilla taken from the Iowa farm pond near Davenport.



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Mature Tree Transplants

Instant Shade In Landscape Design

By ROSS BARNEKOW, President
American Tree & Landscaping Co., Colgate, Wisc.

PICTURE a mature tree in all the splendor of its life-bearing processes, and next visualize it supplying the natural beauty of a tree's age to a plot of scattered shrubs and grass.

What you will soon come to realize is that the transplanting of well-developed trees answers several important needs in modern life. The practice of tree transplants is becoming more common each year as individuals see it as an effective step to improve landscape design and as a creative solution to ecological problems.

Country clubs in general have been aware of the advantages of mature tree transplants for years, helping to lead development in this young field. The club grounds naturally require large trees rather than saplings. Acting with imagination and foresight the greenskeepers have taken advantage of the same service that will be discovered by others in the time to come.

Let us take a look at an example of what I call a *Creative Transplant.* A local site was chosen for the development of a ski hill and winter resort. The site consisted of about 700 acres. Plans were drawn up, structures designed and work began on building the hill.

Suddenly, a unique problem arose. Approximately 500 trees occupied the area that had to be filled as part of the ski hill. A quick check of the records accounted for the exceptional variety and fine quality of the trees. A tree farm had formerly occupied a portion of the land. Through ingenuity and wise responsibility, a decision was reached to relocate the trees.

My company was called in to assist in the execution of this creative plan. The trees were transplanted to a temporary *Holding Nursery* on the site. The ski hill was developed and the structures erected. Then all the trees were transplanted once more, this time to a permanent location according to the designer's plan.

No doubt this lesson in creativity is somewhat unique and not a standard occurrence. Yet it does serve to illustrate the use of the temporary on-site *Holding Nursery* or Tree Bank as they are sometimes referred to by those familiar with the advantages of transplanting adult trees. With every new application of these principles, the excitement of innovation is there to open new avenues for planning.

We recently completed an assignment for a housing development that may give you a better idea of the flexibility transplanting allows. The site was laced with beautiful trees, and the developer intended to work around them, saving as many as possible. Unfortunately, as the blueprints were completed, he discovered the majority of the dwelling units would fall right about where each tree was located. Once again, imagination prevailed. The *Creative Transplant* was considered.

I was called in to review the situation and a solution was found upon which everyone could agree. The trees were transplanted to make a *living fence* encompassing the entire development. The result was a beautiful, natural barrier that insulated the entire subdivision from the noises of the city in which it was immersed.

There are cases, however, where for one reason or another the presence of mature trees is not desired

(continued on page 38)

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48th ANNUAL

International Shade Tree Conference Report

CALIFORNIA hosted a festive, colorful 48th annual convention for the International Shade Tree Conference. Time — mid-August. Site — Newport Beach.

A total of 784 registered. Registration included 506 men, 186 women, and 92 youths. Both women and youth registrations were records.

Theme of the Conference, "Trees—Our Survival Legacy," proved to be a subject dear to every professional arborist. Formal presentation included more emphasis this year on ISTC efforts to accelerate environmental programs as well as a sharing of technology.

A concern of practically every professional arborist and of their equipment suppliers, voiced for the first time at an ISTC convention, was the effect of Occupational Safety and Health Act requirements on the treee care industry. Private opinions of many professionals at the Conference was that a number of OSHA standards are impractical, which likely accounts for the many bills pending before Congress to re-examine current OSHA standards.

McCulloch Corporation manager, J. B. Bailey, Los Angeles, offered a technical review of both research and practical applications of efforts to solve the noise levels of chain saw operation. Pointing out the obsurdity of certain efforts he offered as an extreme example the 5-year plan of the city of Tallinn, capital of Estonia. This city plans to reduce all sources of daytime noise to 35 decibals. This would outlaw motor vehicles, talking, music, wind, birds, etc. It would allow only soft whispers, leaves falling and tiptoeing.

In a more serious vein, he offered technical research related to OSHA's 90 decibel limit. Here, Bailey said, autos, quiet trucks, quiet motorcycles, and even the majority of chain saws make it if the sound level is measured at 50 feet. But, he pointed out, OSHA regulations are for sound level measured at the ear. For chain saws, the sound level is 26 decibels greater at the ear than at 50 feet. Thus, to meet the 90 decibel limit at the ear, the sound level would be 64 decibels at 50 feet. Incidentally, Bailey reported, the sound level of normal conversation measured at 18 inches is about 75 decibels. Obviously, this OSHA specification of 90 decibels, measured at the ear, for chain saws is beyond the present state of the art.

Despite the fact that chain saw manufacturers have done much to reduce both noise and vibration level of commercial chain saws, the OSHA sanctioned standards appear unrealistic. Bailey answered the oft asked question as to why not use ear protection and eliminate the stress placed on noise level. This, he pointed out is not the answer.

There are a number of problems which arise when ear protection is used. For example, ear covers cause the inside of the ear to perspire; also, some people find that the pressure on their earlobes can become painful after a short time.

Secondly, ear plugs, to be effective, are usually uncomfortable. Japanese research shows that individuals using ear protection partially lose their sense of balance.

And finally, enforcing the use of ear protection poses a challenge. Convincing some people that they must wear ear protection falls in the same category as telling them they shouldn't smoke, or should use seat belts.

Baffled mufflers, to bring the sound level down to 90 decibels is

OSHA Requirements Explained...

Concern expressed by arborists about the Occupational Safety and Health Act requirements has caused a good deal of confusion on just what the Law specifies.

WEEDS TREES AND TURF recently interviewed John P. O'Neill, chief of the division of general industry standards, Office of Safety and Health Standards, Occupational Safety and Health Administration, Department of Labor.

According to Mr. O'Neill, OSHA's maximum permissible noise exposure is based on an *average* of 90 decibels per hour measured on the A-scale over an 8 hour day. "There is no one limit," O'Neill said. "This is the maximum; the minimum could be sustained sound levels of 115 decibels for an average of 15 minutes."

Rules and regulations of OSHA as published in the Federal Register show a table for noise exposures:

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

Mr. O'Neill pointed out that most power saw operators do not continuously operate a chain saw for more than 30 minutes to an hour at a time. It is usually a start and stop operation. Further, he said that work breaks and lunch breaks would be counted into the overall exposure period. Thus, a power saw operator may be exposed to high noise levels for only a small portion of any average day.

WTT asked O'Neill whether any chippers currently on the market complied with OSHA standards. "I am not aware of any," he said. "However, two administrative controls can be implemented in cases where chippers are used. Ear defenders (protectors) can be worn by operators. And rotation of people from the source of the noise can be accomplished." If employees cannot wear ear protectors, because of infection, ruptured ear drum or configuration of outer ear, a simple rotation of work will decrease noise levels at the ear.

O'Neill said that the American National Standards Institute (ANSI) is currently developing standards for tree trimmers. "These will be reviewed and possibly adopted by OSHA," he said.

In addition, the Environmental Protection Agency (EPA) is developing noise standards for communities. These will be incorporated in the Environmental Protection Act.

not the answer, Bailey said. Research shows that, if the exhaust noise is eliminated, the purely mechanical noise, including the chain, is about 100 decibels at the ear or 74 decibels at 50 feet. In fact, even electric chain saws can exceed the OSHA acceptable sound levels.

A summation of the current situation of OSHA sanctions would indicate that there is a need for legislation at the Congressional level to bring some semblance of realism to the approach which is now the law.

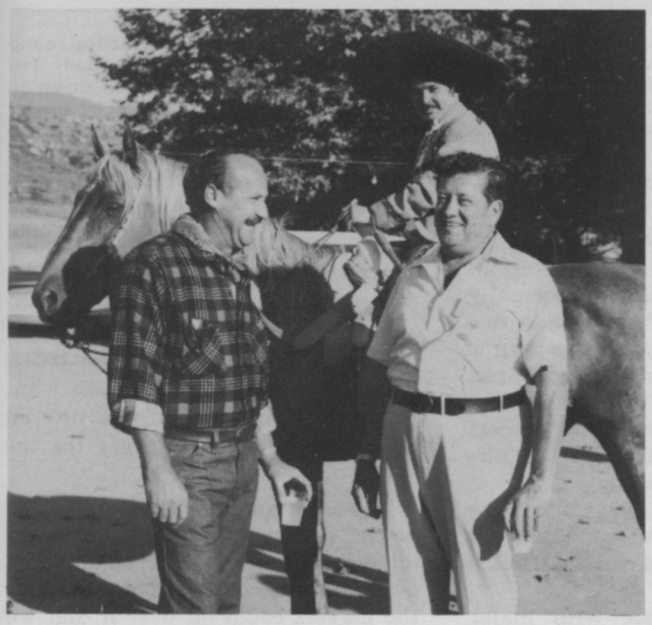
Speaking on why OSHA came into being was John Holgdren, manager, Loss Control Services, Bayly, Martin & Fay Insurance Brokers, Los Angeles. He emphasized the point that each year 15,000 men die as a reult of their jobs. In only four year, he said, as many people have died because of their employment as have been killed in almost 10 years of the Viet Nam war. Further, he said, more than two million men are disabled in industrial accidents annually.

OSHA came into being, he said, because states were not fulfilling their responsibility in the areas of occupational safety and health. To comply and live within the meaning of the Act, Holgdren said that he believed that a firm who made a practice of safe working conditions for employees over the past years would have little or no difficulty living with OSHA. He said that he believed that it is reasonable to assume that enforcement of the act will tend to upgrade the profession to the degree that those firms who do not comply will gradually be upgraded or phased out.

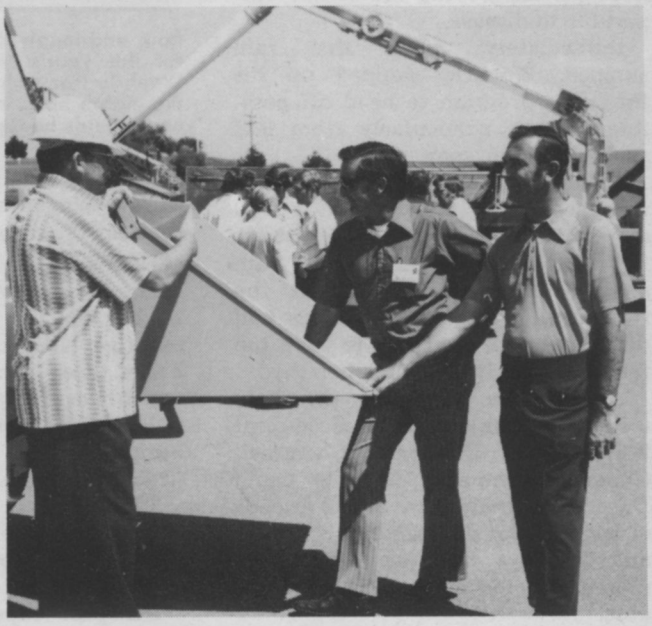
Limb-Lopper booth is typical of 50 carnival type tents for commercial exhibits at '72 ISTC. Exhibitors reported much interest in equipment. The upcoming 1973 ISTC convention is scheduled for Boston, Mass. No final date has been selected.

Convention delegates and other speakers on specific phases of OSHA effect on the tree care industry apparently failed to agree with the simplicity of compliance voiced by Holgdren. One industry representative indicated that the current

(continued on page 32)



William T. Bell, superintendent for street trees, Long Beach, Calif., and general chairman for the California Conference, left, and George D. Foster, general sales manager for Skyworker, Delaware, Ohio, visit at evening barbecue.



John Dougherty, Asplundh, Azusa, Calif., left, discusses new model chipper with Charles H. Cissel, Guardian Tree Experts, Kesington, Md., center, and Robert E. Pletcher, Asplundh division manager, Azusa.

much damage to turf when they are walking. But we knew there wouldn't be much turf left in the areas immediately surrounding each green where crowds would be standing and constantly shuffling their feet."

Woehrle drew on the experience of colleague Andy Bertoni, now superintendent of Holly Greens Country Club, Holly, Michigan. "Just prior to a major tournament at Meadowbrook in Detroit where Andy was superintendent at that time," Woehrle said, he overseeded the areas where he expected damage from the crowds. As predicted, the existing turf was demolished, but immediately after the tournament was over, Andy had new turf coming up."

Woehrle used the same concept for this year's PGA at Oakland Hills. One week before the start of practice rounds, and after the gallery ropes had been strung, Woehrle overseeded the area (approximately 10 feet wide) behind the ropes. "We did nothing more than put down seed over the healthy turf at about 1½ lbs./1000 sq. ft.," Woehrle stated, "and let the crowds work the seed into the ground for us. A day or so after the crowds were gone, we had new bluegrass coming up."

Only five weeks before the PGA another problem came up — tropical storm Agnes. Although Detroit was only skirted by Agnes, more than 3½ inches of rain fell in a 72-hour period, leaving the course vulnerable to disease.

Immediately after the rain stopped, Woehrle stepped up his fungicide program to head off possible trouble, particularly from leaf spot and dollar spot.

"I had been applying fungicide to the greens and fairways on a 7-10 day schedule at two ounces/1000 sq. ft.," said Woehrle. "After the rain stopped, I immediately doubled the rate until I was certain things had dryed out enough. I like to keep the turf reasonably dry and healthy.'

Among the fungicides Woehrle utilizes at Oakland Hills is Daconil 2787 from Diamond Shamrock Chemical Company. He began using Daconil to obtain control of a broader spectrum of diseases on his greens and fairways when he determined mercury would no longer be acceptable.

"A couple of years ago it was pretty obvious mercury would be on its way out," commented Woehrle, "and I also noticed that the mercury was a little toxic to the turf, causing a temporary change in color. I didn't have this problem at Beverly (Woehrle was superintendent at Chicago's Beverly Country Club from 1959 to 1968) but I definitely did get a reaction here in Detroit."

Changes on some of the fairways and greens on the 7,054-yard course were also made for the tournament by Woehrle's 20-man crew. "We reduced the landing areas to 90-100 feet from the normal 110-120 feet," noted Woehrle, "and we added some prominent sand traps (more than 100 already existed) on several holes. Our sand traps are not manicured. We have a very rugged lip similar to traps in Scotland; we never touch it."

The par for members is normally 72, but for the PGA we made two par five holes into long par four's. All of these things made the course, which was designed by Donald Ross in 1917 and toughened by Robert Trent Jones in 1951, about as difficult as it has ever been.

Truck drivers and the press were two elements of tournament week upon which Woehrle focused much of his attention.

His past experience with major tournaments, including two Western Opens at Beverly convinced him that the single biggest problem came from trucks delivering the variety of goods necessary to the tournament, ranging from beer to sanitary facilities.

"Delivery truckers seem to share a common philosophy," Woehrle commented, "that the shortest distance between two points is a straight line. Once they pull on the grounds and see the tent they're supposed to go to, they head straight for it — across fairways, tees or whatever."

For this tournament, Woehrle made it standard operating procedure that no truck was allowed on the grounds without one of his men accompanying the driver. "It eliminated a lot of problems," he recalls, "such as the time a hot dog bun delivery van pulled on the course, and headed directly for the concession tent in the middle of the course. He would have made it nonstop, but he came to a tee. He got out of the truck, dropped the ropes, and drove over the tee. When I approached him about it, he offered me a dozen buns to forget the incident.

"During another major tournament, a beer truck got stuck in the middle of a fairway. Fortunately, the truck was close enough to the tee so the players could hit over it. But we had to unload every case of beer and call in a large wrecker, which left more tracks, to get the truck out.

Rain and tough rough made the course even more difficult during a practice round for this year's National PGA Championship tourney. Course superintendent Ted Woehrle (far right) offers solace to Jack Nicklaus as he surveys an errant drive on the eighth hole. Meanwhile, Arnold Palmer climbs aboard a groundskeeper tractor and shields himself from the downpour by an umbrella.

We also worked pretty late that night repairing the fairway for the next morning's round," he said.

Woehrle also made press relations part of his standard operating procedure for this year's tournament. "The inaccurate and incomplete press coverage concerning the condition of the course in some of this year's earlier tournaments," emphazied Woehrle, "convinced me that I should be aggressive in seeing that the press had a source of complete information about Oakland Hills."

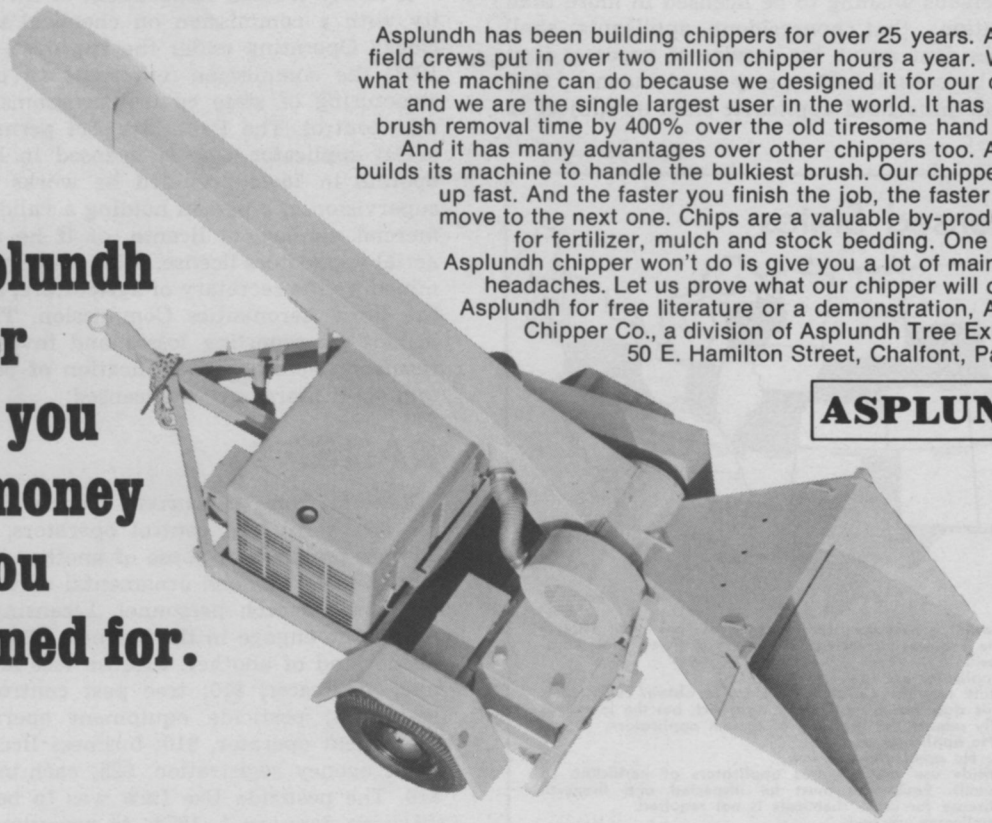
Woehrle followed a two-step plan for press relations. First, in the press tent, he made certain each of the 200 typewriter had a note on it offering to answer all questions concerning the course and its condition.

His second step was actual *face to face* contact with the press during the tournament. "I spent a substantial amount of time around the press tent offering to supply information or answer questions," he injected. "Even though the course was in excellent condition, I still found being there gave me a chance to talk about the course preparation, how we made it more difficult, and so on.

Sand traps at Oakland Hills are never manicured. They feature a rugged lip similar to traps in Scotland.

"In contrast, if the course had not been in good shape, being in the press tent would have given me an opportunity to explain to the reporters why it wasn't before they wrote their stories. At least they would have had correct information to work with, even if their stories still came out unflattering. I think this year has shown the absolute necessity for the superintendent to be providing accurate, complete information whenever the press is involved with the course."

Woehrle is now putting these ideas and many others he used in preparing for the 54th Championship into a booklet for other superintendents to use in getting ready for a major tournament. It should be finished late this year.



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ASPLUNDH

GEORGIA

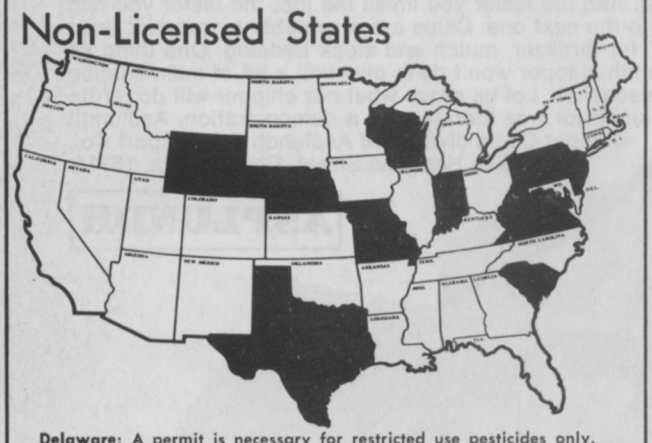
House Bill No. 571, approved April 3, 1972, creates the Georgia Pesticide Use and Application Act regulating custom applicators who engage in the business of applying pesticide. No provision is made to license dealers in restricted use pesticides and state, municipal and other governmental agencies are exempt from licensing — but not necessarily the "permit" requirement — provisions of the act. The Bill becomes law January 1, 1973.

HAWAII

The latest Senate Bill, No. 13, approved May 19, 1972, repeals most of the existing state pesticide control laws. In their place is the Hawaii Pesticides Law, a fourt part act that makes it unlawful to apply any pesticide in excess of dosage or inconsistent with time or other limitations specified on the label, use or apply restricted pesticides unless the person is a certified pesticide applicator with a valid certificate issued pursuant to regulations. Also, the department of agriculture may issue regulations to establish limitations and conditions for the application of pesticides by aircraft, power rigs, mist blowers, and other equipment.

IDAHO

New provisions proposed in a number of senate and house bills approved in 1971 add new teeth to the Commercial Sprayers and/or Duster Law. At presstime, some of the proposed changes include: providing for division of licenses into classifications: separate testing for such classifications; that an additional fee not be required of persons wishing to be licensed in more than one classification; that nonresident applicants shall designate a resident agent for service of process; first offense shall be considered a petty misdemeanor; that operation as an unlicensed applicator shall be subject to a forfeiture of $50 each day of unlicensed operation, as a civil penalty; and, that pesticide applicators who sell pesticides as an integral part of their services shall be exempt from dealer licensing provisions.



Delaware: A permit is necessary for restricted use pesticides only.
Indiana: Statute requires aerial applicators to register with Aeronautics Commission.
Missouri: No applicator use law.
Nebraska: Statute requires aerial applicators to obtain certificates.
New Jersey: This state has a Pesticide Control Act, but the law does not necessarily require the licensing of custom applicators.
Pennsylvania: No applicator use law.
South Carolina: No applicator use law.
Texas: A herbicide use law requires applicators of herbicides to obtain a permit. Equipment must be inspected and licensed. Applicators license for other chemicals is not required.
Virginia: No applicator use law.
West Virginia: No applicator use law.
Wisconsin: No applicator use law.
Wyoming: Aerial applicators must be registered with the state.

ILLINOIS

A nonresident desiring to apply pesticides in this state must annually pass an examination. Residents engaged in custom application must be licensed by the Director of the department of agriculture. Exemptions include structural pest control operators, fumigators, governmental bodies, tree experts. The director may restrict licensee to the use of certain types of materials or equipment. Other relevant laws applying to custom applicators include: Tree Experts, an act requiring examination, licensing and regulation of persons who diagnose, recommend treatment, or provide care for ornamental or shade trees; and The Insect Pest and Plant Disease Act, primarily a nursery inspection and pest quarantine act.

INDIANA

A Pesticide Review Board is the newest addition to the Indiana Code. In an Act, effective since January 1, provisions are incorporated of both the uniform State insecticide, fungicide, and rodenticide act and the model use and application act. In defining the term "restricted use pesticide" the Board includes any pesticide "found and determined to be unduly hazardous to persons, pollinating insects, bees, animals, crops, wildlife, or lands, other than the pests it is intended to prevent, destroy, control, or mitigate."

IOWA

A newly created Department of Environmental Quality with a commission on chemical technology (pesticides). Operating under the approved Pesticides Act of 1971, the commission represents an organizational restructuring of state control programs, including pesticide control. The Pesticides Act permits a nonresident aerial applicator who is licensed in his home state to operate in Iowa provided he works under the direct supervision of a person holding a valid Iowa aerial commercial applicators license, or if he acquires an Iowa aerial applicators license, posts bond in an amount determined by the secretary of agriculture, and registers with the Iowa Aeronautics Commission. The act adds provisions for reporting losses and investigating damages resulting from aerial application of pesticides. All custom applicators must be licensed.

KANSAS

Exempt from the current Kansas Pesticide Use Law are structural pest control operators, persons working on own premises or those of another in an exchange of work, shade tree and ornamental shrub work, and Government research personnel. Licensing is required for those who engage in the business of applying pesticides to the land of another. License fees are: pesticide business applicator, $10; tree pest control operators, $100 (pending); pesticide equipment operator, $10; public equipment operator, $10; business license, $25; government agency registration, $25; each unit of equipment, $10. The pesticide Use Law was to become fully operative on January 1, 1972. At presstime, an amendment delays implementation until January 1, 1973.

(continued on page 24)

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Highly resistant to stripe smut, rust and leaf spot. Stripe Smut sporulates in May or June, shredding individual leaves. Field trials show that, while Merion is quite susceptible, Pennstar is highly resistant. It's also highly resistant to rust: rated on a scale of 0 (best) to 10 (worst), test data give a 1.7 rating to Pennstar vs. 8.7 for Merion. University tests also show Pennstar to be significantly more resistant to leaf spot than some improved varieties.

Medium color, good density, easy to manage. Pennstar persists at moderate-to-low fertility levels. It doesn't over-react to higher fertility. Because of its decumbent growth, Pennstar can tolerate close mowing. It can withstand drought conditions better than some other Kentucky Bluegrass varieties. And, with its pleasing medium bluegrass color, Pennstar is ideal for blending with other varieties. In mixtures, it's neither too dark nor noticeably light.

No excess thatch after 11 years. Pennstar does not produce damaging quantities of thatch. In tests at Penn State, plots of Pennstar torn up after 11 years revealed no excess thatch. (No dethatching had been done in that entire period.)

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Dennis Lee Wagner, Superintendent, Homestead Executive Golf Course, Spring Lake Heights, New Jersey

"You can really see the difference Pennstar makes. We've used Pennstar on fairways, greens and around the clubhouse and condominiums. Our results have been *very good* with Pennstar—it's held up real well with almost no fertilizing and very little watering. It's given us a real thick stand of grass, the color is a beautiful, lush green and I haven't noticed any disease at all. And people are saying that Homestead really looks like a golf course again."

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KENTUCKY

To become effective January 1, 1973, the first Pesticide Use and Application permits the director of agriculture to issue a list of "restricted use pesticides." No provision is made to license dealers in restricted pesticides. Existing registration laws and the structural pest control law retain their current status. The Kentucky Department of Aeronautics KAV-5, "Aerial Applicators," a regulation, requires aerial applicators of agricultural chemicals to obtain a permit before engaging in the business of applying chemicals to crops, and requires certain bonding procedures.

LOUISIANA

Aircraft pilots and supervisors of ground equipment are required to pass a written examination before obtaining a permit to operate equipment in this state. License fees are: license, $25; permits — examination, $2; renewal, $1; equipment inspection — aerial, $10, ground, $10, hand, $2. Licensing procedures under the Louisiana Horticulture Law grants a horticulture commission authority to license and regulate the practice of persons engaged in: entomology, plant pathology, tree surgery, horticulture, landscape architecture, landscape contractor, and ornamental plant spraying and dusting.

MAINE

Custom application of pesticides without a license is unlawful in this state. Licenses are issued for a calendar year. Licensing laws affecting arborists are covered by the Arborist Law. Further, a new section to the state pesticides control board law would make it unlawful "to apply pesticides to or in any river or stream or tributary thereof, or any great pond, without a permit from the board . . ."

MARYLAND

This is one of the few states where financial responsibility is detailed fully. A licensed custom ground applicator must carry public liability of $20,000 for each person and $40,000 for each occurrence. In addition, he must carry $15,000 for each occurrence of property damage and $30,000 aggregate for property damage. A licensed custom aerial applicator must have financial responsibility of $50,000 public liability for each person, $100,000 each occurrence and property damage coverage of $50,000 each occurrence, $100,000 aggregate. The same dollar figures apply to a pest control consultant, both ground and aerial. While licensing examinations are not specified in the Maryland Pesticide Applicators Law, a regulation of the state board of agriculture requires oral or written, or both be administered.

MASSACHUSETTS

Licenses are granted upon passing an examination and remain in force for a period of two years. Qualifications specify that an applicant must be 16 years of age or over and that two classes of licenses are established: operational and supervisory. Massachusetts has also established judicial procedures for preventing damage to the environment. The attorney general, as of July 18, is granted authority to "prevent or remedy damage to the environment . . ." and the term "damage to the environment" is defined so as to include "pesticide pollution."

MICHIGAN

According to the Application of Economic Poisons, it is unlawful to operate pesticide equipment or apply pesticides commercially unless licensed by the director of agriculture. Exempt from this mandate are municipalities, road commissions, or state or Federal agencies. Although no written or oral examination is required, examination of the applicator form is made. An amendment to the Michigan Insecticide, Fungicide, and Rodenticide Act of 1949, approved August 12, 1971, would require restricted use pesticide dealers to obtain an annual license, ($50.000 fee) after satisfying the director as to their ". . . knowledge of the laws and rules governing the use and sale of economic poisons and . . . responsibilities (as a dealer) . . ." In addition, it would require dealers to furnish the director a ". . . record of all sales of restricted use pesticides . . ." and to keep copies of such records for a period of 2 years.

MINNESOTA

The Minnesota Spraying and Dusting Law prohibits spraying or dusting for hire unless licensed by the commissioner of agriculture. Senate Bill No. 624, approved May 21, 1971, amends the Minnesota Economic Poisons and Devices Law by: requiring dealers in restricted use pesticides to obtain an annual calendar year license and to pay an application fee of $20.00, and adding a new section relating to the handling, discarding, storing, and displaying of pesticides and authorizing the commissioner of agriculture to issue regulations governing such activities.

The act further amends the spraying and dusting law by requiring licensed aerial applicators to have passed an examination prepared by the department of aeronautics and administered by the department of agriculture; licensed applicators who apply pesticides in public waters to pass an exam prepared by the department of natural resources and administered by the department of agriculture. It also requires licensed applicators to carry identification cards and to present them upon request of the commissioner or a law enforcement officer. It would make it unlawful for any applicant or licensee to permit any judgment against him to remain unsatisfied for more than 30 days.

MISSISSIPPI

As amended, the Application of Hormone-type Herbicides by Aircraft law requires aerial applicators of herbicides to have additional licenses and keep certain records. Written examinations are required. All other applications of pesticides are administered under the Mississippi Pest Control Law, a licensing law, requiring application, examination, bond, record keeping, etc. (includes structural pest control operations).

MISSOURI

This state has no pesticide use and application law. The only other relevant law to the application of pesticides is the Missouri Economic Poison Law of 1955.

NOV. WTT APPLICATOR USE LAWS—PART II

Cancer-Inhibiting Plants Explored By USDA

A means for controlling cancer may well result from plant-collecting exploration now being undertaken by the U.S. Department of Agriculture.

Medicinal Plant Resources Laboratory Leader Robert Perdue of USDA's Agricultural Research Service says the program brings the broad spectrum of chemical substances in plants before a screen of selected cancer systems in living animals. Eventually the program carefully sifts out and identifies those chemical substances that have potential value for cancer chemotherapy in man.

During an early exploration, a tree from China called *Camptotheca* was sent to a U.S. Plant Introduction Station by an ARS plant explorer. In 1962, extracts from this rare tree exhibited definite anti-cancer properties. Since that time, intensive chemical and biological research has been focused on this plant.

The earliest known record of plant use for treating cancer or cancer-like disease is the Ebers payhrus — a document which dates from about 1550 B.C. This early Egyptian work recommended more than 40 plants for the treatment of tumors and warts and other possibly malignant growths. Some of these plants were barley, garlic, flax, absinthe, coriander, figs, onions, dates, and grapes.

It is interesting to note that this papyrus also mentioned two other plant products: yeast and the berries of juniper. The juniper berry is now known to produce a substance that is selectively toxic to cancer cells; yeast is the source of folic acid, which is also used in cancer therapy.

The present intensive search for anti-cancer drugs began in 1956, focusing first on synthetic chemicals and fermentation products. From January 1956 through 1971, more than 110,000 such materials were screened for anti-cancer activity.

Tests began on plant products during Fiscal Year 1957, and an average of about 5,000 have been tested during each year since 1961.

Plant materials are procured by botanists of ARS — the largest plant-procurement agency in the United States. Many other individuals or institutions have supplied smaller numbers of plant samples or extracts.

The procurement efort is centered in the Medicinal Plant Resources Laboratory — one of two ARS laboratories that have been procuring plant material for over 60 years for all phases of agricultural, biological, and chemical research.

Plant samples for anti-cancer screening by USDA botanists were first obtained in the United States, with some searches also conducted in Mexico. Later, samples were procured in Pakistan, Korea, Spain, Yugoslavia, Turkey, Uruguay, and Israel. Searches have also been made in Puerto Rico, Ethiopia, and Kenya, Tanzania, and Uganda, other parts of Africa. New projects are under way in Taiwan, Panama, Brazil, Peru, India, and New Zealand.

USDA botanists have also obtained plant samples through commercial suppliers of seeds, plants and bulbs.

All collections are carefully documented to identify every sample. Accurate documentation is esesntial so that future USDA plant collectors will be able to return to the same location and procure duplicate samples, if necessary.

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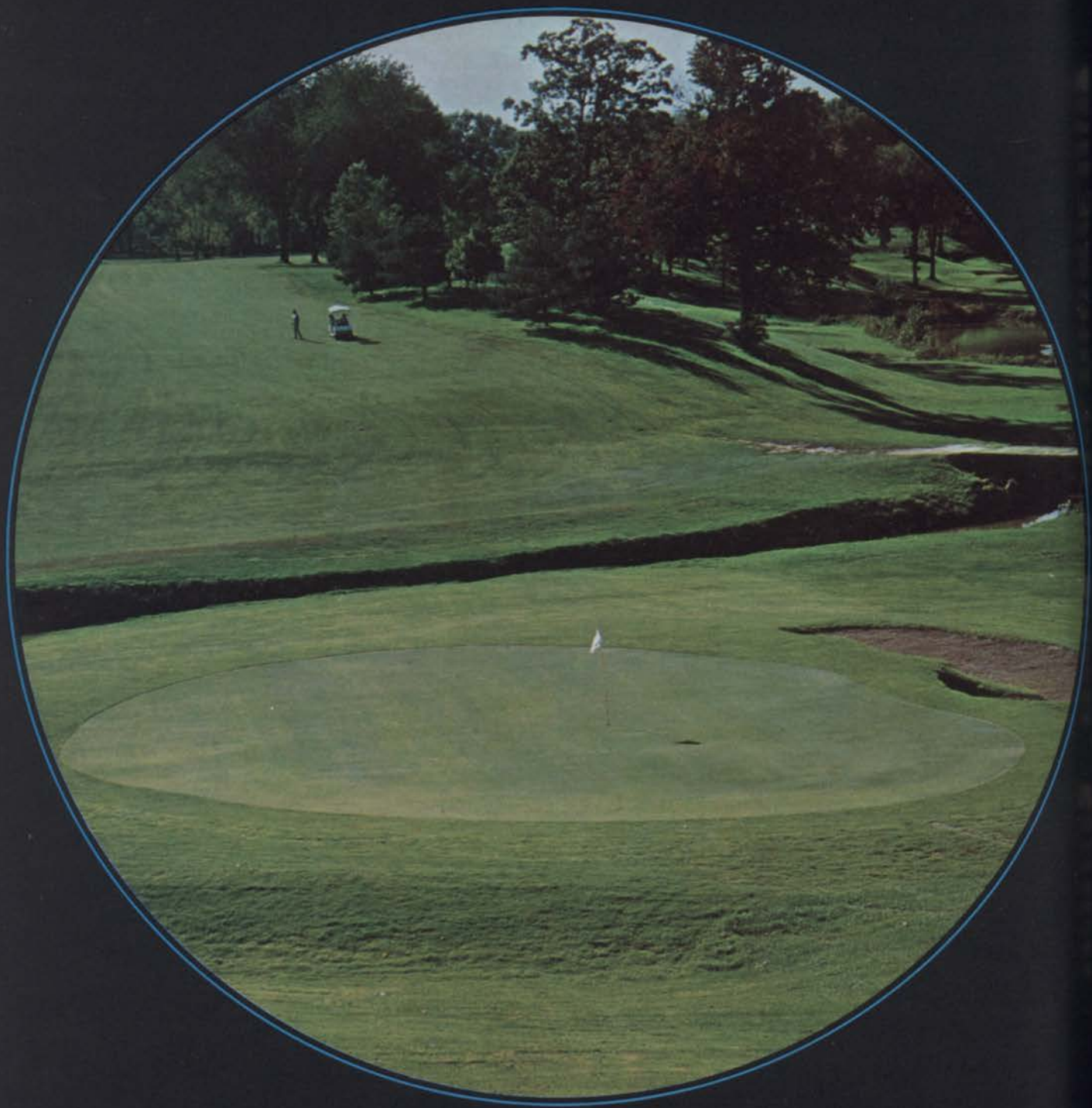

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Daconate is a ready-to-use arsonate liquid, pre-mixed with the right amount of surfactant for maximum coverage and control. Since it is an organic arsenic compound, it does not have the more toxic properties of inorganic arsenic compounds, such as calcium or lead arsenate. For best results, spray Daconate during warm weather when weeds are actively growing.

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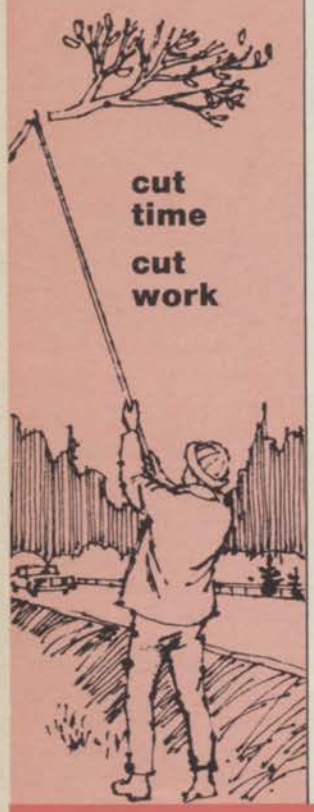

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Tropical Horticulture School Opens In Hawaii

The Pacific Tropical Botanical Garden will be initiating a two-year training program in tropical horticulture this fall. The instruction provided in the Training Program is intended to give the student a broad base of technical knowledge combined with practical experience. This will enable him to have increased job mobility in tropical horticulture at supervisory levels.

The educational program is designed to combine technical knowledge with practical skills.

The course in itself is a complete unit and reverses the usual approach of separating academic and applied studies.

The program is not intended to be a preparation for continuing academic study at a four-year college or university. Upon completion of his training, the student should be ready to be a productive employee in an entry level job and be prepared to advance to positions of increased responsibility.

Since this is an intensive two-year course, specialized training will begin immediately. Courses offered include: elementary botany, horticultural science and applications, nursery management, plant identification, economic entomology and plant disease control, weed control, ethnobotany, landscape maintenance and plant propagation.

About three-fourths of the student's time per week (30 hours) will be devoted to work-experience. Supervised or directed work-experience will be used to develop specific horticultural skills and understandings and to encourage desirable work habits and attitudes.

This year three on-island and three off-island students will be accepted for the first session of the program. Those off-island students selected for admission will be given a $3,000 Study Grant for anticipated living and school costs. The basic entrance requirements are: a completed application form, high school graduation or equivalent, a general proficiency in the English language, and some practical experience in horticulture is preferred.

Anyone who desires to apply for this program or is interested in further information should contact Mr. Steven Frowine, Educational Supervisor, Pacific Tropical Botanical Garden, P. O. Box 758, Koloa, Hawaii 96756, Telephone: (808) 332-8131.

Irrigation University Started By Toro

The Moist O'Matic Division of The Toro Company is establishing a year-round training center for personnel involved in selling, designing, installing and maintaining institutional, industrial and commercial irrigation systems.

David W. Good, Moist O'Matic director of marketing, said the training center, to be located in the division's Riverside headquarters, will provide a flexible but concentrated teaching program to increase the skills and knowledge of persons involved in all aspects of irrigation systems utilization.

He said the irrigation systems industry is growing so rapidly that there is a severe shortage of skilled personnel. The industry, he said, will not be able to reach its potential unless that problem is alleviated.

Good said there were no short-term training facilities available to help industry personnel improve either their skills for specific tasks or their overall understanding of how various types of irrigation systems function and what they are designed to accomplish.

The Toro training center is expected to admit its first student group from California, on October 1. A formal opening, with classes available to participants from the rest of the U.S. and Canada is scheduled for November 6.

Good said the center's training program, which will include both classroom and field work, has been designed to serve primarily five groups: Installers (usually independent businessmen), specifiers (usually landscape architects commissioned to design a landscape plan including a sprinkler system layout) distributor salesmen, franchisees (independent businessmen specializing in the sale of Toro irrigation equipment), and personnel from golf courses, universities, schools, federal and state institutions and local municipalities who are responsible for turf and lawn maintenance.

Subjects to be covered include: how to survey, drafting techniques, types of sprinklers, sprinkler performance and spacing, sprinkler application and selection, hydraulics, friction loss, piping systems, control systems, codes, drain valves, service, installation, contracts, and sales aids.

E. Lee Bean, formerly district manager for Moist O'Matic irrigation products in the Mountain States area, has been appointed manager of the center.

William S. Norton Named Mr. Toro 1972

Mr. Toro 1972, the highest honor that The Toro Company can bestow on one of its distributors, has been awarded to William S. Norton, head of The Norton Corp.—Turf Equipment, of Phoenix.

The award was made at the annual convention of distributor management and sales personnel where the Minneapolis-based manufacturer previewed its product lines and marketing programs for the coming year.

Three master salesmen were also honored at the weeklong meetings. They were: John Fitzgerald, of Lebanon, Ohio, for turf products; Don Hayssen, of Rochester, N.Y., for consumer products; and Lloyd Van Sickle, of Minneapolis, for Moist O'Matic irrigation products.

Norton, whose all-around performance this past year was voted the best of Toro's 90 distributors throughout the world, became the Phoenix distributor for Toro's full line 15 years ago, after nine years with Toro in Minneapolis.

Florida Turfgrass Meeting Scheduled October 16-17

"Environmental and Agribusiness Aspects of Turf Management" is the theme of the 20th annual Management Conference of the Florida Turf-Grass Association. The meeting will be held at the Flagler Inn, Gainesville, Oct. 16-19.

Dr. E. T. York, Vice President for Agricultural Affairs, University of Florida, will give the official welcome at the beginning of the General Session on Tuesday afternoon, October 17, and will deliver an address on "Turf Industry's Contribution to Florida Agribusiness." Dr. W. G. Eden, Chairman of the Entomology Department will speak on "Agribusiness Aspects of the Pesticide Industry in Florida." State Representative Robert E. Dixon will be speaking on "Present Florida Pesticide Legislative and Future Needs." The Annual Business Meeting and election of officers will take place Tuesday evening at 7:30, with President William F. Lewis presiding.

Wednesday sessions will begin at 9:00 A.M. with two Sections, one on Golf Turf and the other on General Turf. Wednesday afternoon will feature the Annual Barbeque and tour of the turf plots.

The 20th Anniversary will be celebrated at the Wednesday evening banquet. Willard Fifield will be Master of Ceremonies and Mr. Hugh McIlwain the speaker.

Carbon Monoxide Levels Higher Away From Job, Research Shows

Exposure to carbon monoxide (CO) by employees away from work may be greater than many suspect, according to the National Safety Council.

An experiment, conducted by three staff members of the Industrial Hygiene and Safety Division at Argonne National Laboratory, Illinois, showed that 27 percent of some 460 responding participants found positive indications of carbon monoxide in their homes or automobiles.

Carbon monoxide detector tabs, available from a Danish firm, were used in the study. They were passed out to volunteers during the winter when heating systems give off the most CO, and doors and windows are usually shut. Each person received two tabs, one for exposure and one for shade reference.

The tabs were small plastic squares about two inches by two inches, with a dime-sized circular depression filled with a compound containing palladium chloride which blackens when exposed to carbon monoxide.

Of 454 people returning the tabs and questionaires used in the study, 124 reported positive indications of carbon monoxide. Eighty-eight of 342 persons who used the tabs in their automobiles reported positive indications of CO. Seventy-six indicated a slight darkening of the tab (30 to 70 parts of CO per million). Ten persons reported gray tabs (80 to 120 ppm), and two reported black indications (more than 130 ppm).

Of 204 individuals that used the tabs in their homes, 36 had positive reactions, of which 35 reported a slight darkening and one a gray response.

Among the responding participants who found indications of carbon monoxide in their automobiles, 16 discovered defects in their cars. Where there were indications of CO in the home, five participants reported defective heating systems.

According to a report that followed the tests, "while levels of CO, up to approximately 70 ppm, are not considered immediately hazardous in a well ventilated and properly heated home, they could mean a furnace malfunction or improper ventilation. But unless remedied, such conditions could produce CO levels far above safe levels."

The experiment noted that though CO exposures occurred off-the-job, effects of carbon monoxide may be carried over to work places.

Among their conclusions, the Argonne researchers said: "carbon monoxide is a significant health and safety problem, and it warrants continued attention."

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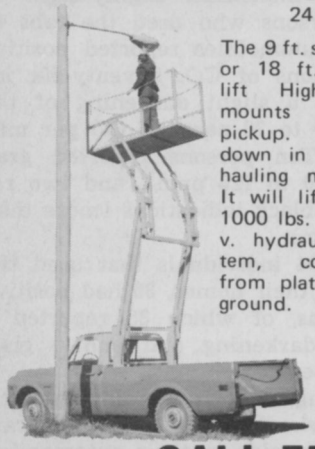

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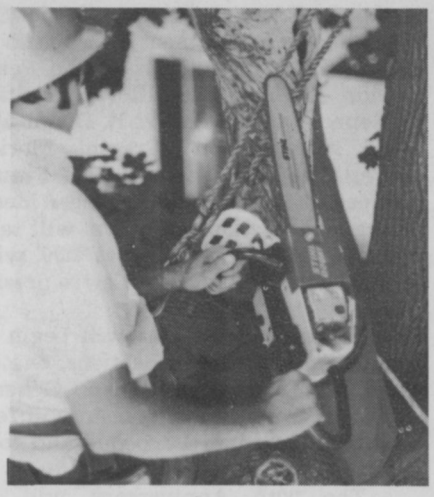

It only takes a tiny nick into a climber's rope from a power saw to send him to "tree man's heaven."

The wise climber finishes all large cuts with a hand saw to avoid saw pinching. It also provides an extra measure of safety.

POWER SAW SAFETY *(from page 11)*

fall. 2) Never, ever cut tree all the way through hinge when making the final backcut.

CARRYING SAW — Even short distance carrying with a saw can be dangerous. To start with, if the saw is warmed up and running at a high idle, the chain is probably moving. Even just a little nick from a moving chain can leave you with a nasty gash. More often than not you keep your saw from stalling and check your chain oil flow by revving the saw up a little between cuts and while walking from location to location. Ever think what would happen if you tripped and fell while you were walking along with your finger on the throttle? Think about it right now! And the next time you don't feel like taking the time or effort to shut off the saw and start it again when you're walking from one pile of brush to another or from one tree to the next, think about it then, too. If you must carry your saw while it's running, at least have a proper grip on it, have it and your own balance under complete control, and watch where you are going.

BYSTANDERS — Power saws create a double dose of danger to bystanders and other workmen in the area because the noise they produce impairs the hearing of the operator to a degree that he cannot hear others working near him or for that matter, even calling to him. Anyone working near a chain saw operation should try to make his presence known by getting the operator's visual attention. Every power saw operator should always look around regularly to see who and what is near him.

REFUELING — "Gassing up" a saw is much more dangerous than many think. If you doubt that, just observe how many people keep right

(continued on page 34)

Be doubly cautious of wires when using power saws in trees.

"Bucking" heavy logs always presents a danger. Work "uphill" from wood to be cut. Always keep feet clear.

—meeting dates—

Turfgrass Equipment and Materials Educational Exposition, 12th annual, Southern California Turfgrass Council, Brookside Park, Pasadena, Calif., Oct. 11-12.

Southwest Turfgrass Conference, New Mexico State University, Las Cruces, N. Mex., Oct. 12-13.

Florida Nurserymen and Growers Association, 21st annual trade show, Daytona Plaza Hotel, Daytona Beach, Fla., Oct. 13-15.

Industrial Weed Control Conference, Memorial Student Center, Texas A&M University, College Station, Tex., Oct. 16-18.

Central Plains Turfgrass Conference, Kansas State University, Manhattan, Kan., Oct. 18-20.

Wisconsin Golf Turf Symposium, Pfister Hotel, Milwaukee, Wisc., Oct. 25-26.

National Institute on Park and Grounds Maintenance, 2nd annual, Muehlebach Hotel, Kansas City, Mo., Oct. 30-Nov. 2.

Missouri Lawn and Turf Conference, 13th annual, Ramada Inn, Columbia, Mo., Nov. 8-9.

Nebraska Weed Control Conference, 26th annual, Holiday Inn, Kearney, Neb., Nov. 8-10.

Washington State Weed Conference, Chinook Motel and Tower, Yakima Wash., Nov. 15-17.

Nebraska Turfgrass Conference, Kellogg Center, University of Nebraska, Lincoln, Nebr., Nov. 20-22.

Oklahoma Turfgrass Conference, student union, Oklahoma State University, Stillwater, Okla., Nov. 29-30.

Texas Turfgrass Conference, Memorial Student Center, College Station, Tex., Dec. 4-5.

National Agricultural Aviation Association Conference, 6th annual, Las Vegas Hilton (international) Hotel, Nev., Dec. 11-14.

Ohio Turfgrass Conference and Show, Franklin County Memorial Building, Columbus, Ohio, Dec. 12-14.

Western Association of Nurserymen, 83rd annual meeting and trade show, Plaza Inn, Kansas City, Mo., Jan. 7-9.

Golf Course Superintendents Association of America, 44th annual International Turfgrass Conference and Show, Boston, Mass., Jan. 7-12.

New York State Arborists Convention, Annual, Nevele Country Club, Ellenville, N.Y., Jan. 14-17.

California Weed Conference, 25th annual, Disneyland Hotel, Anaheim, Calif., Jan. 15-17.

Michigan Turfgrass Conference, 43rd annual, Kellogg Center, Michigan State University, E. Lansing, Mich., Jan. 16-17.

Southern Weed Science Society, 26th annual meeting, Jung Hotel, New Orleans, La., Jan. 16-18.

Rocky Mountain Regional Turfgrass Conference, 19th annual, Colorado State University, Fort Collins, Colorado, Jan. 25-26.

Virginia Turfgrass Conference, Sheraton Motor Lodge, Fredericksburg, Va., Jan. 30-31.

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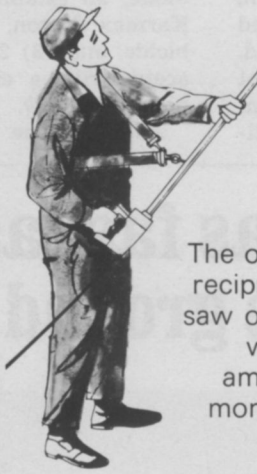

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ISTC REPORT *(from page 19)*

chipper models on the market would not meet OSHA requirement. Efforts to develop kits to reduce noise levels of existing models have not as yet been successful; new models not as yet on the market, however, hold promise of meeting OSHA standards, he pointed out.

Dr. Paul Cheo, chief of research at the State and Country Arboretum, Los Angeles, discussed oak root rot disease *(Armillaria mellea)* and its control. He listed it as one of the most widespread diseases of woody plants in Southern California. It is able, he said, to parasitize almost 700 species of woody plants and some herbaceous plants, and is also a saprophyte, meaning it can flourish in the soil for many years on infected stumps, roots and other organic matter.

Dr. Cheo emphasized practical control. He pointed to soil fumigation as effective for a large scale operation, but as expensive and not recommended for home-garden, street plantings, or already infected trees. A valuable tree can be saved, he said, if its crown and anchor root trunk area can be protected from further damage. With good fertilization programs to keep up the vigor of the tree, an infected tree can live to its normal age. Exposing the crown and main root trunk area in the immediate circumference of a yard to the air-dried conditions, is highly recommended for oak and many other shade trees, he pointed out.

Deep watering, Dr. Cheo said, is recommended when watering is needed, and surface watering, especially the wetting of the crown and root trunk area should be avoided.

Effort has been made in the L. A. Arboretum, he said, to find chemicals which are effective in inhibiting the growth of *Armillaria* and which can be applied to exposed areas for further protection. Of 20, Dr. Cheo reported on three which have proved to be highly effective, showing strong inhibitory effects to the growth of *Armillaria* at or below the 50 ppm level.

These three effective chemicals, Dr. Cheo reported, are: (1) Actidione, an established fungicide, (2) Karmex diuron, an agriculture herbicide, and (3) 2,4 dichlorophenoxyacetonitrile, a closely related compound of 2-4,D.

Actidione, he said, is now being studied in the Arboretum laboratory for its practical application. It completely inhibited growth of *Armillaria* at the 25 ppm level in culture medium tests, he stated. When incorporated with 1% dimethyl sulfoxide (CMSO) as penetrant, Actidione at 900 ppm can be applied topically on the crown and exposed root trunk area. In oak trees where corky bark is thick, the reports debarking vertically for one-quarter inch in width near the crown area to promtoe penetration of Actidione to protect these areas. For smooth trees, such as lilac, Dr. Cheo said, constant wetting above the crown area with the chemical solution promotes the effectiveness of chemical action.

Further experiments are underway to find better means of application of Actidione to woody seedlings infected with *Armillaria* and also, he stated, to analyze whether active forms of Actidione can be transported to root zones.

Norman Gray, president of the Associated Landscape Contractors of America, Transit Seeding, Inc., Mansfield, Mass., discussed change in trade associations and criteria for their survival and effectiveness to their respective industries. Among the best moves made in his own

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Mows a 68-inch swath at speeds up to 4 miles per hour, a half acre in 15 minutes.

It's a turf-professional type mower, with three powered, free-floating reels that follow ground contour. It shears grass cleanly; doesn't leave unsightly "tip burn" as rotaries often do.

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company, he said, was joining the ALCA. He reported he has since joined several other associations-oriented toward his business, and that membership is "the only way to go," for a businessman.

Associations, he said, have something to offer members, but their future is dependent on the results accomplished. Mortality rate is high, he said, when members are disinterested. He strongly urged member support in maintaining and building association projects. Gray stressed the need for a strong association voice which carries clout. "Associations," he said, "are listened to, but individuals, not very often.

"The big thing today is confrontation," he pointed out, stating that, "Your organization is the only one really capable of handling this for you." As an example, he said that the ALCA is working to create a strong national voice to speak for the landscape industry. "We must make ourselves heard, become involved at all levels of government, as well as all related building, financing, and designing industries."

Awards presented at the '72 convention included: Award of Merit — Harry J. Banker, West Orange, N. J., and John Z. Duling, Munice, Ind.; Authors Citation — George H. Hepting, Asheville, N.C., and Leslie Laking, Hamilton, Ontario, Canada; Honorary Memberships — Clayton M. Hoff, Wilmington, Del., Ethil M. Hugg, Johnstown, N.Y., L. R. Quinlan, Manhattan, Kan., and Lois Wilson, Toronto, Ontario, Canada; and Honorary Life Membership — Winston E. Parker, Moorestown, N.J., and Archibald Enoch Price, Glenview, Ill.

The upcoming '73 ISTC convention is scheduled for Boston, Mass., with Dan Warren, Jr., superintendent of parks, Brookline, Mass., as chairman of the local committee.

President-elect John A. Weidhaas, Jr., Virginia Polytechnic Institute, Blacksburg, Va., left, and outgoing President H. M. Van Wormer, Van Wormer Tree Service, Inc., Richmond, Va.

John D. Cyprien, assistant general chairman for the California Conference, (l) and Eugene B. Himelick, executive-director of ISTC.

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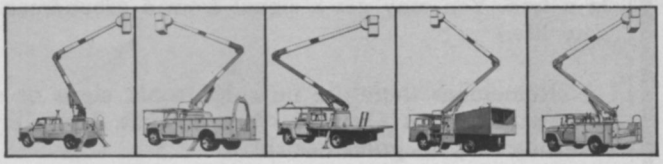

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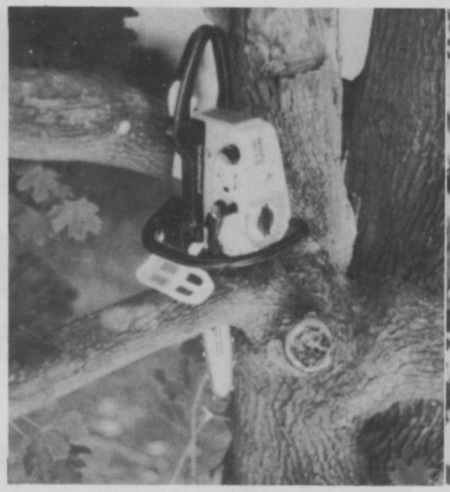
Proper protective clothing is a big part of power saf safety. Note the newer type of screen-style protectors (on right).



Foolishly hanging saw temporarily on stubs or crotches not only could smash your saw, but also could kill or injure workers below.

POWER SAW SAFETY *(from page 30)*

on smoking while they are pouring gasoline into the saw! Even without cigarettes, refueling a hot saw always creates a certain fire danger. Volatile gas spilled on a red hot muffler could make an instant emergency for you. Refueling should be done in an isolated clearing and a funnel or fuel filler hose should be used to prevent gas spillage. Gas cap should be screwed on tightly and saw removed from the fueling area before restarting.

CLOTHES—Proper clothes should be worn by every chain saw user. This would include safety shoes (with steel toes), a hard hat, safety goggles or eye screens (to keep chips out of your eyes) and clothing that is not so loose that it could easily snag in brush (and cause a fall), or even possibly catch on the chain. If it is very cold you should wear gloves to make sure your hands don't get cold or numb enough to weaken your firm grip on the saw.

BUCKING AND LIMBING—These two operations actually make up the bulk of ground work with a power saw. In addition to the foregoing safety considerations, bucking and limbing operations require some additional care. Whenever cutting up logs it is important to prevent their accidental rolling over or dropping down, possibly on the saw man. This can be done by careful "chocking" to hold log firmly in place even after it is cut. The operator should still take care to always be uphill from any possible roll the log could take. When using wedges for bucking, special care should be taken to use only wood, plastic or other "soft" wedges. Accidentally cutting into a steel "wood splitting" wedge could throw out dangerous metal "flack" or cause your saw to kick back. (In addition to damaging and dulling your chains.) Use extreme care in cutting limbs that are above shoulder level. They could fall on you or pull the saw down suddenly, possibly into your body. Or they could swing around and hit you. Even tiny branches could severely injure your eyes. Or when limbs hit the ground, the butt end could "bounce back" at you. Many chain saw manufacturers show overhead limbing in their ads. But don't be fooled. It's very dangerous, even for pros.

Power Saw Safety Checklist

1. Don't start a saw till you have checked it over carefully. Spark plug wire on properly? Fuel cap on tight? Chain properly adjusted?
2. Think ahead. Know what you're going to cut before you start saw. Look around before you start.
3. Hold saw firmly at all times. When your hands get numb from fatigue or cold, stop till you're o.k.
4. Wear protective clothing. Especially protect your eyes and feet at all times.
5. Exercise care when refueling saw. No smoking! Move away from fueling area before restarting.
6. Keep work area clear at all times. Watch your step.
7. Don't carry a running saw around while it's running.
8. LOOK . . . LOOK . . . LOOK — Remember you have to compensate with your eyes for what you can't hear when cutting. Keep looking behind you and overhead. (Look down **often** if you're in a tree. You may get a signal from a groundman that could save your life.)

Remember there are no rules, tools, signs or designs that can prevent accidents. Only you can do that. Use all your equipment carefully . . . in good health!

SAFETY ALOFT

Nearly all professional tree men now use power saws while up in trees. They have been a great boon. But they do create an additional safety hazard (This topic was discussed at lenght in August issue's excellent article by Blair E. Caplinger.) The greatest of these dangers are:

CUTTING THE SAFETY LINE—This danger can be reduced by exercising extreme care to "sight up" your cut and make sure you know where your ropes are. Also, never pass a saw over or under any of your ropes when it is running. Not ever while idling. The slightest slip of the finger throttle could blow the last whistle for you. To be safe, any

saw operator in a tree should have **two** tie ins (one rope, one strap, etc.) when making power saw cuts.

MUFFLER BURNS — Not usually a cause for serious injury, but certainly worth avoiding. The few extra seconds it takes to let muffler cool are worth not getting burned for. Also, some saws are *designed* better than others in this department. Look for a better design on your next saw. Some climbers use a long saw holder strap to prevent getting burned. This is a bad move because then the saw can more easily get caught in branches and tangle in ropes. (Power saw teeth can cut rope even when not running.) Not only that, but the first thing you know the climber is hopping from limb to limb with the saw running, (yes, foremen, it's true)—a death-defying practice if there ever was one. A hundred minor muffler burns aren't worth one serious fall and if climbers are carrying their saws close on their belt you can bet they won't leave them running.

KICKBACK, KICKOUT AND PINCHING — Even on small cuts kickback can occur because of knotty wood, small branches in the way, etc. The man in the tree is usually cutting horizontally too, which makes it harder to hold the saw as firmly as if his feet were flat on the ground. The best bet is to try to get yourself in the best, most comfortable position possible and use the firmest grip you can. Also, check in advance for causes for kickback. Be on guard especially when cutting hard, dead wood. Try to use saw at arm's length, especially if cut to be made is derectly in front of your face.

The smart climber finishes *all* of his cuts with his hand saw. (Preferably with the power saw back on the ground or at least safely tied in out of the way.) This gives him an extra margin of safety in case the top kicks out before expected or a limb pops off ahead of time. He can swing clear much more safely with just a hand saw—which he can drop if necessary—than he could with a buzzing chain saw in one hand. In addition, the thinness of a hand saw allows you more cutting before "the pinch," and it's safer and easier to work it out if it does get pinched. Some of the most dangerous scenes I have ever seen in tree work have been climbers frantically trying to work a pinched power saw out of a cut before a big top or limb snapped off.

Some **Unexpected Hazards** that not many saw operators think much about until they happen are:

KICKBACK WHEN STARTING a cold saw . . . it can catch you off guard and cause a terrible cut.

ELECTRIC SHOCKS caused by faulty or loose ignition wires. This can cause you to lose your grip or drop a saw. Especially dangerous when you're up in a tree! Check to make sure spark plug wire is properly attached to avoid this shocking experience. Also watch for power wires whenever you're working in a tree.

CUTS FROM CHAIN while sharpening saw. Those teeth are viciously sharp even when they're standing still. Beware when filing cutters or drags and when pulling chain around bar by hand.

Am. Horticultural Society Receives $5000 Federal Grant

The American Horticultural Society has announced receipt of a grant of $5,000 from the U. S. Office of Education, Department of Health, Education and Welfare.

Society president David G. Leach said the grant would be used to enable the Society to host a conference that would look at the horticultural side of the environmental crisis. Anticipated date is fall 1973.

"The conference will call together key people active in horticulture, education, urban and highway planning, landscaping, communications, from national and civic organizations and other groups," Leach said. The invitees will be chosen because of their active involvement in environmental betterment activities, he added. Findings will be published and made available to the public.

Funding for the grant is made possible under the Environmental Education Act of 1970, administered by the U. S. Office of Environmental Education.

"It is our intention to apply the funds to develop better interrelation and coordination among environmental programs with a horticultural component," the Society's president affirmed.

"The AHS," Leach said, "expects a two-fold result from such a session: first, to help the non-horticulturists in an area where horticultural knowledge is of direct significance; second, to establish new priorities for horticulture by giving people in the field a more meaningful and relevant direction in the environmental area where the role of horticulture should be better understood and utilized."

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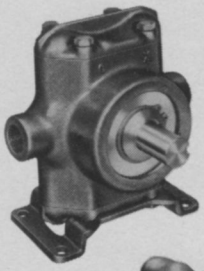

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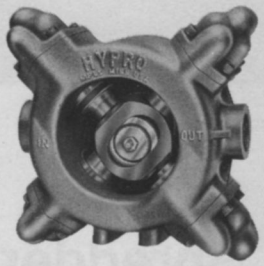

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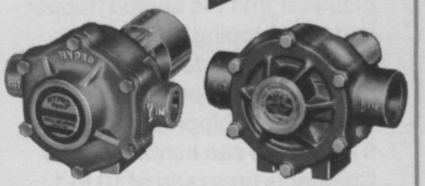

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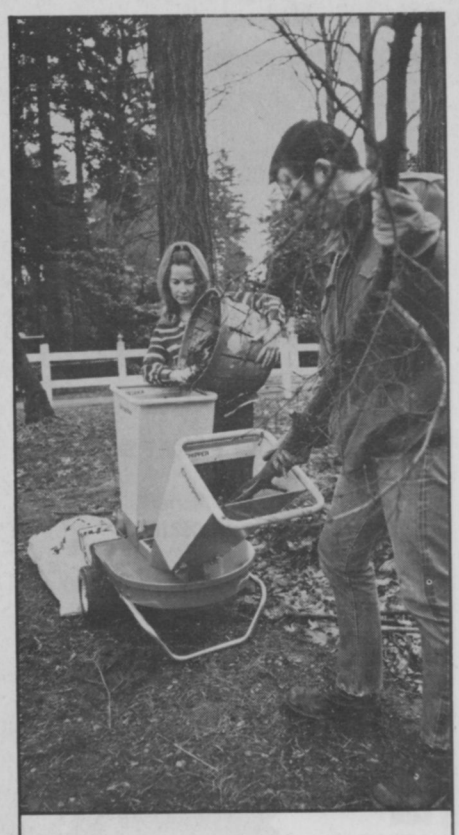

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HYDRILLA IN IOWA *(from page 14)*

mental products, identified it and sent it to Robert D. Blackburn at the USDA Research Center in Fort Lauderdale, Fla.

In late August, Blackburn, Patterson, other 3M Company officials as well as conservationists from Illinois and Iowa, a Wisconsin biologist and others gathered at the Riehle pond to witness the Hydrilla spectacle.

Blackburn quickly identified the plant as Hydrilla and told about 25 persons present, "It looks similar to elodea *canadensis* or American elodea. One of the identifying characteristics is the internode spacing. Spacing between internodes becomes less as the plant foliage approaches the water surface." Other characteristics of this weed are a flower and a tuber which develops under the soil. The density of tubers has been known to run between 35-125 tubers per square foot of soil.

Hydrilla is not native to the United States. It was imported several years ago as an aquarium plant. In documented cases, the weed has escaped and entered waterways and lakes in Florida where it has choked navigable waters. Hydrilla attaches itself to the bottom soil and sends out foliage in all directions.

The scientist noted that the Riehle pond water has a lot of calcium in it which is ideal for Hydrilla growth.

"I'm wondering if elodea *canadensis* is actually elodea," Blackburn speculated. "If you compare it to Hydrilla, the two look alike." What has been thought to be elodea may in fact be Hydrilla.

Presently there are three aquatic herbicides available that control Hydrilla. They are: System E herbicide from 3M Company, Hydout weed killer from Pennwalt and the tank-mix combination of Cutrine and Diquat from Applied Biochemists, Inc. and Chevron Chemical Company, respectively. All products are registered for use in Florida only.

Is there an immediate danger of Hydrilla invading other ponds, streams, waterways or even the nearby Mississippi River? Blackburn indicated that initially he was surprised to learn about the adaption of the weed to this colder climate. He said that Hydrilla has been cited in only three southeastern states.

The danger that exists depends on where it can be established, he said. Of course, one effective way to decrease the incidence of the weed is to isolate and quarantine known infestation areas. Hydrilla in the Riehle pond is the first case of Hydrilla outside of the southeast. Thus, isolating the pond from other ponds may prevent the spread of the weed.

Tests will conducted throughout the remainder of this year and a close monitoring system will be activated to hold any chance of a potential Hydrilla spread in check.

Peter Riehle, (standing) who first noticed the growth of the hydrilla in the pond, explains what happened. Environmental products experts from 3M Company, area newsmen, state and government officials and WEEDS TREES and TURF gathered at the pond for a quick breakfast before examining samples of hydrilla.

Proudly holding the Meritorious Achievement Citation received from Melvin R. Laird, Secretary of Defense, for the installation's outstanding conservation program, are Col. Arthur L. Knipp, Jr., Post Commander, Picatinny Arsenal and Frank Ferry, his deputy. Joining them are those who directly supervised work that brought award to Picatinny. Left to right, Michael George, grounds maintenance foreman; Joseph Bozzuffi, agronomist; and Alfred (Red) MacKinnon, chief, bldgs, roads & grounds branch.

Defense Conservation Award Won By Picatinny Arsenal

For the fourth time in the last five years, Picatinny Arsenal has won a Department of Defense conservation award.

With the Meritorious Achievement Citation, which was for the installation's 1970 conservation program and which complements similar awards for 1966, 1968 and 1969, came expressions of appreciation and congratulations from several highplaced officials, including Melvin R. Laird, Secretary of Defense.

Mr. Laird noted that the Arsenal's outstanding conservation program "reflects great credit upon the installation, the personnel thereof, the Army and the Department of Defense."

Lt. Gen Joseph M. Heiser Jr., the Army's Deputy Chief of Staff for Logistics, said the citation attests to "the vigorous efforts made by the installation to promote fish and wildlife activity, create new recreational opportunity, and further the application of conservation and management principles."

Each year, Defense Department installations throughout the United States submit reports with accompanying photographs of their achievements in land, forest, wildlife and select the winners based on accomplishments in woodland improvement and protection, wildlife management, weed control, grass, tree and shrub planting, soil improvement, safety and insect control.

The arsenal maintains close liaison with county, state and federal agencies having related responsibilities in the field of natural resources conservation, including the Morris County Extension Service, the Mosquito Control and Soil Conservation District, the New Jersey State Departments of Environmental Protection and Agriculture and the U. S. Departments of Agriculture and Interior.

Picatinny Arsenal covers 6491 acres of land including 3793 acres of woodland, 1462 acres of improved grounds, 308 acres of lakes and ponds and the balance on other uses.

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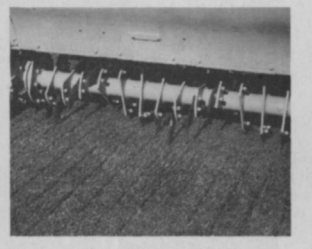

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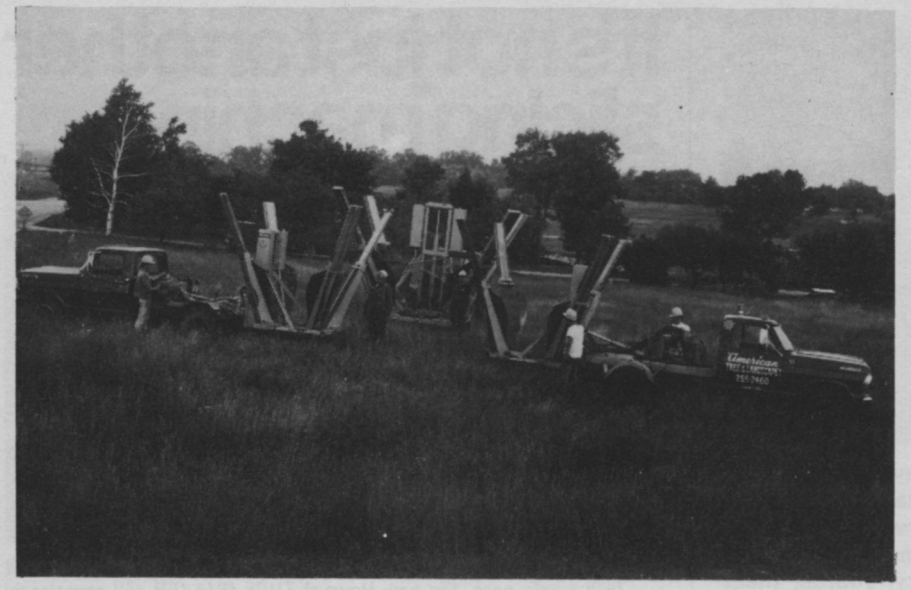

Digging the holes for the trees new locations.

Digging out the tree to be transplanted.

Setting trees into new locations.

INSTANT SHADE *(from page 16)*

and a developer earmarks these existing trees for destruction. Rather than simply churning out pulp from a transplantable tree, our staff now makes good use of these trees. We move them to *The Ranch,* a local home for mentally retarded children. Eventually, the picnic grounds at *The Ranch* will be dressed with mature trees to be enjoyed by the children and their friends.

Even here, our company's charity comes second to plain good sense of fully utilizing our services. Why destroy a perfectly healthy tree when it can be transplanted to bring pleasure and practical rewards to someone else? Today, it is within our reach.

I've been pointing out the "benefits" of mature tree transplants, so perhaps it is in order to list a few:

1. Erosion is checked.
2. Property values are increased.
3. The beauty of a site is greatly enhanced.
4. Noise pollution is reduced—sound is absorbed by trees and shrubs.
5. The general ecology is improved—trees are a natural habitat for birds, squirrels, etc.
6. Protection from natural elements is provided with a "living fence," for tennis courts, housing developments, industrial parks, etc.

If the benefits of the mature tree transplant are so great then one may rightly ask, "Why hasn't this practice spread in popularity, beyond the country clubs?"

To begin with, the practice of transplanting is becoming more widespread than ever before. **The major factor holding this practice back is mere oversight.** In most cases the architect, designer, developer, etc. does not stop to determine the cost or the client's desire for mature trees to be transplanted to a site. If the proper research is done, they would discover that the cost is not prohibitive, and the client is greatly appreciative of the creative suggestion. Just as in any landscape endeavor, there are numerous variables that influence the cost of transplanting trees. From our experience, once the transplant is considered it is very rarely thwarted by economic factors. **In fact, the cost of buying young saplings, planting them, and maintaining them is many times greater than the cost of transplanting mature trees already growing on the site.**

Nevertheless, what can discourage

(continued on page 44)

industry people on the move

TOM V. DECKELMAN, named branch manager, Allis-Chalmers Credit Corp., Columbus, Ohio. He will be responsible for sales financing and leasing of company products sold by dealers and distributors in central and southern Ohio and western West Virginia.

* * *

DR. RONALD W. TILLMAN, joined the staff of CPI Biological Research Center, formerly Crop Protection Institute, at Durham, N.H. He will be directly concerned with research and development of fungicides and coordinator of phytopathological research.

* * *

DAVID WHAN, named ProTurf technical representative in northern Indiana by O.M. Scott & Sons. He worked in turf research while obtaining his B.S. degree in agronomy and turf management at Purdue.

* * *

SIDNEY R. LUTTINEN, to district sales manager of the industrial chemicals department of Pennwalt Corporation. He will be responsible for sales activity in northern Washington, Alaska, Montana, northern Idaho and northern Wyoming.

* * *

R. C. (BUD) PRYOR, becomes quality assurance and technical services manager for Sabre Saw Chain Ltd. With 10 years of industry experience, Pryor will be responsible for quality and performance as well as customer service and liaison on a world-wide basis.

* * *

GEORGE B. VANDENBERG, transferred to Florida as southern district sales manager for Rohm and Haas in the agricultural and sanitary chemicals department. **JAMES L. PIERSON,** becomes manager eastern sales district from product manager for agricultural fungicides, miticides and fertilizers. **RON L. CHEVES,** assumes position of product manager, responsible for the sale of all agricultural pesticides.

* * *

JOHN C. NORTON, named general manager of consumer products as well as vice president in charge of the international and distributing divisions of the Toro Company. **E. H. WINGATE,** promoted to group vice president of administration with responsibilities for corporate planing and development, distributor relations, personnel administration, advertising and public relations.

* * *

WILLIAM E. CONWAY and G. G. PIRRONE, elected executive vice presidents of Diamond Shamrock Corporation. Conway was formerly vice president of the corporation and Pirrone was president of Diamond Shamrock Chemical Company unit. **WILLIAM H. BRICKER,** group vice president of Diamond Shamrock Chemical Company, has been appointed president.

* * *

J. NELSON FRENCH, joined Rental Equipment Manufacturing Co. as vice president of marketing. He will work closely with sales representatives and distributors across the country.

* * *

DAVID E. HERNDON, joined Thompson-Hayward Chemical Company as agricultural sales representative. He will be located in Sanford, Florida.

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Safety Of Turf—Natural Or Synthetic

By JOHN H. HALL
Extension Turf Specialist
University of Maryland

The startling fact that consumer products each year injure 20 million Americans, permanently disable 110,000, and kill 30,000 more led to the hearings before the subcommittee on Commerce and Finance concerned with bills to protect consumers against unreasonable risk of injury from hazardous products.

The safety of synthetic turf was questioned during these hearings. The hearings have been completed and it seems a good time to summarize the subcommittee findings and discuss synthetic and natural turf.

The first artificial turf sports surface was installed in 1964 on a fieldhouse floor at Moses Brown Prep School in Providence, Rhode Island.

The first synthetic outdoor football surfaces were installed in 1967 on stadium fields at Indiana State University and Seattle Memorial High School. The popularity of the artificial surfaces increased rapidly to the point where 42% of all National Football League games were played on synthetic turf in 1971.

There are now more than 100 football fields in the United States constructed of synthetic turf.

Many cities and schools are considering the installation of synthetic turf.

There is disagreement over the usefulness and safety of synthetic turf.

The subcommittee attempted to shed some light on the question of the safety of synthetic turf.

Mr. Edward R. Garvey, executive director of the National Football League Players Association related the complaints of NFL players to the members of the subcommittee. He noted player complaints of sore knees and ankle joints, increased burns, excessive heat build-up, secondary injury from the bouncing effect, and increased danger of helmets grabbing on synthetic surfaces.

Dr. James G. Garrick, orthopedic surgeon and assistant professor at the University of Washington presented data from locally conducted research that involved 228 games played by 26 high school football teams and 1350 players. This data indicated that in the 1970 football season there were 0.76 injuries per game on synthetic turf and .52 injuries per game on grass.

Dry synthetic turf produced .93 injuries per game compared to .61 injuries per game on wet synthetic turf. Games played on dry grass turf produced .53 injuries per game compared to .50 injuries per game on wet grass.

College level studies by Dr. Garrick further support the contention that dry conditions on either synthetic or natural turf lead to increased injuries as a result of better traction and harder player-to-player contact.

Dr. Garrick never contended that his research had settled the question, but did indicate that further studies were needed.

A witness testifying in behalf of the synthetic turf industry later criticized the research work of Dr. Garrick, indicating his study method was superficial and his results inconclusive. Considerable data was presented by the synthetic turf industry in defense of the safety of their product. Their survey data generally contradicted the findings of Dr. Garrick.

It was generally agreed that a more extensive study was needed to determine whether synthetic turf is more or less hazardous than natural turf.

There are some important advantages to synthetic turf that must be honestly admitted. The increased wearability does mean that greater use can be made of intensive use areas. Maintenance costs after installation are less with synthetic turf.

Uniform cleaning bills are substantially reduced.

The advantages of natural turf include the fact that they are the most economical play surface available for all types of playing fields. An athletic field installation costs less than 10% of the cost of artificial turf.

Artificial turf cost estimates for a football field range from $350,000 to $400,000.

Natural grass is relatively easy and inexpensive to repair and provides the coolest playing surface available. On a 90° F day it is generally conceded that synthetic turf will be at least 20° F hotter than natural grass.

It appears the survival of synthetic turf for use on athletic fields hinges around four unanswered questions:

1. Is synthetic turf more or less hazardous than natural turf?
2. Does the safety of synthetic turf decrease with age?
3. How long will synthetic turf last before it must be replaced?
4. Can the installation cost of synthetic turf be reduced?

The investigations brought about by the Consumer Product Safety Act indicate that the answer to the first question will likely not be conclusively determined for 2 to 5 years. The answers to the second and third question must await time and further testing. The current cost of synthetic turf is beyond the reach of the average school athletic budget. Until the above questions are conclusively answered, the future of synthetic turf remains in limbo.

References

1. Part 1, Consumer Product Safety Act, serial no. 92-59 U.S. Government Printing Office, Washington, D.C. 1972. p298.

"Instant Shade!" Now...Plant Large Trees in Minutes!

Vermeer TS-66T Tree Spade Does It . . . Automatically!

"The Diggin' Dutchman" introduces "Instant Shade" . . . with an automatic tree mover that digs, balls, transports and plants large diameter trees in minutes. The Vermeer TS-66T is fast . . . it's economical . . . it's automatic. One man and one TS-66T can handle the entire job in minutes. That's why we call it "Instant Shade," and that's why Vermeer Tree Spades are used by landscapers, nurseries, cities, rental yards and tree service firms everywhere. Write "The Diggin' Dutchman" for information and complete literature.

Another Tree Spade From . . .

THE DIGGIN' DUTCHMAN

VERMEER TREE SPADE DIVISION
7210 W. Washington ● Pella, Iowa 50219

Truck-mounted TS-66T Tree Spade transplants big 6" diameter tree with hydraulically-operated, high tensile steel spades. Digs 66" diameter tree ball, down to 60" deep to prevent root damage.

For More Details Circle (128) on Reply Card

Meeting Site Ballot Sent To ASPA Members

The American Sod Producers Association has queried its members for a location of a winter meeting.

According to Dr. Henry W. Indyk, three preferred locations have been selected, San Diego, Honolulu and Phoenix. In a letter to Association members, board member Tobias Grether has stated the meeting date to be mid-February.

We are attempting to put together a program around financial aspects of the chart of accounts produced for us by Kallick in Chicago, said Grether. The program would be built around this financial statement to analyze the profitability of your operation and the indication it will give you of what to change and how to gain better profits through its use.

The idea of the winter meeting would be to charter an aircraft from either Chicago or New York and fly ASPA members to the meeting site. In all, seven potential sites may be voted upon.

Members are asked to indicate their preference of area and forward this information to Dr. Henry W. Indyk at their earliest convenience.

Assoc. Landscape Contractors Opens Booth Space For Show

The Associated Landscape Contractors of America (ALCA) is now reserving booth space on a first come first served basis for its 11th Annual Meeting and Exhibit to be held January 21-26, 1973 at the Doral Country Club and Hotel, Miami, Florida.

This show offers exhibitors a once-a-year opportunity to display equipment, supplies, products, and services to a truly decision-making audience of landscape contractors.

A record attendance is expected.

There will be no competing functions, either business or social, held during the exhibit.

For information concerning the Meeting and Exhibit contact Tom Stewart, ALCA, 1750 Old Meadow Road, McLean, Va. 22101, (703) 893-5440.

Maryland Horticulturist Receives National Recognition

Dr. Francis C. Stark, Jr., horticulture department chairman in the College of Agriculture at College Park, has become the University of Maryland's sixth faculty member in five years to be elected as a Fellow of the American Society for Horticultural Science.

Dr. Stark was among 15 distinguished members of the Society in the eighth annual class of Fellows honored at the organization's awards banquet highlighting the sixty-ninth annual ASHS meeting.

The society's signal honor is accorded to those members who have made outstanding contributions to horticultural science—the profession or the industry—in the areas of research, teaching, Extension, or administration on a state, national or international level.

A native Oklahoma, Dr. Stark has been an ASHS member since obtaining his B.S. degree from Oklahoma A & M in 1940. He obtained his M.S. at Oklahoma A & M in 1941 and his Ph. D. from the University of Maryland in 1948.

For fastest-starting turf

PARK Variety Kentucky Bluegrass

The 1972 crop grown by Northern Minnesota Bluegrass Growers Association is the best yet. Production is up, quality excellent.

We advise you to order your Park seed early, *as supplies of this popular variety are usually sold out before the end of the season.* All seed is Minnesota-certified.

Available exclusively from

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Phone (612) 789-8821

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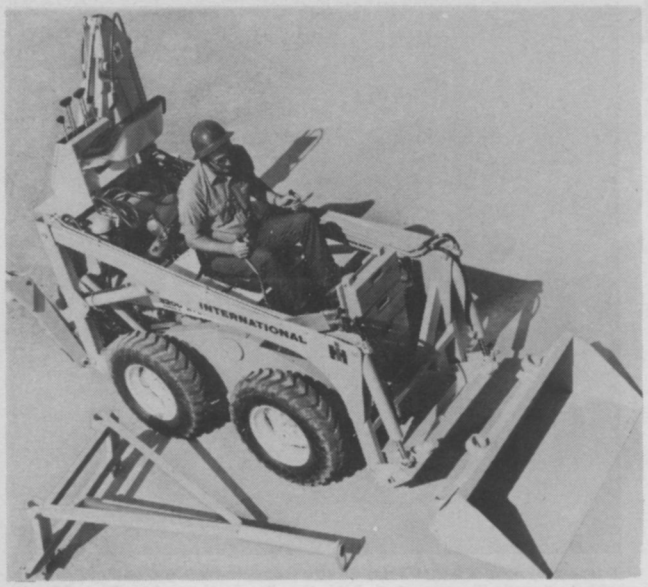
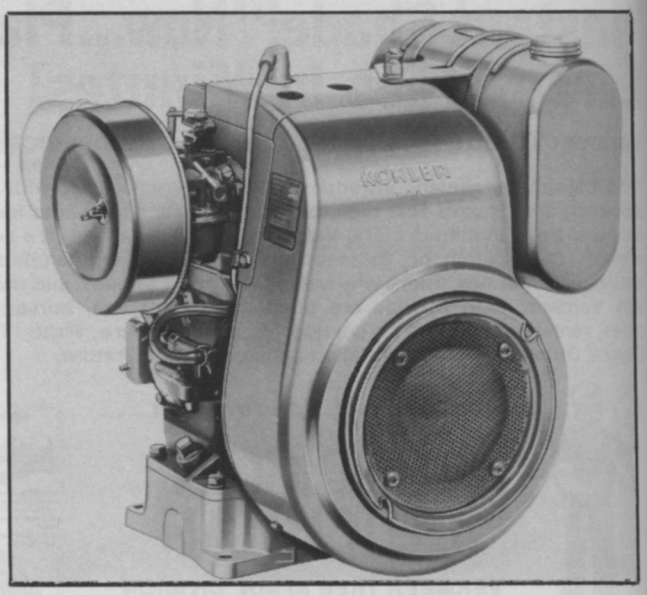


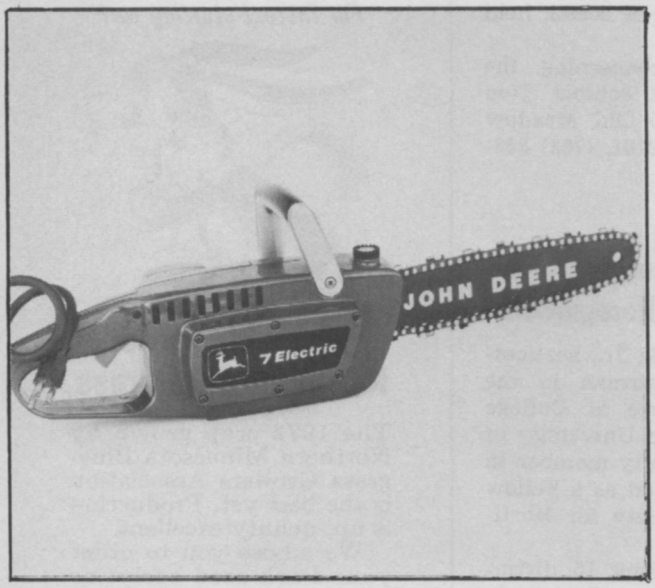
QUICK-CHANGE LOADER: International Harvester Company, Chicago, Ill.

Need a loader for a variety of jobs? Here's one where versatility was stamped across the design specifications. A quick-change plate attaches to the loader arms and cylinders of model 3200A. The operator then drives up to the attachment, engages the pins into the holes and hoists. The weight of the attachment automatically moves the bottom rings into position. No mechanical parts to malfunction or rust shut. Attachments include a variety of utility and dirt buckets, a blade, an adjustable fork lift, a lift boom, snow bucket, a bracket to mount a snow blower and a new 6-tine manure fork. For more details, circle (701) on the reply card.



COMPACT 16 HP ENGINE: Kohler Company, Kohler, Wisc.

You asked for it and here it is. A new 16-hp, air-cooled, cast iron engine that is within ¼-inch of earlier Kohler compacts and weighs but 4 pounds more. The new model K341 has low sound and vibration levels. An automotive-type muffling and inherent sound dampening features of cast iron make for quiet operation. Other features include full chrome rings for longer ring and engine life, new cylinder head for improved combustion, larger capacity air cleaner, re-designed porting and valving that contributes to optimum power output and automatic compression release to assure positive starting. For more details, circle (702) on the reply card.

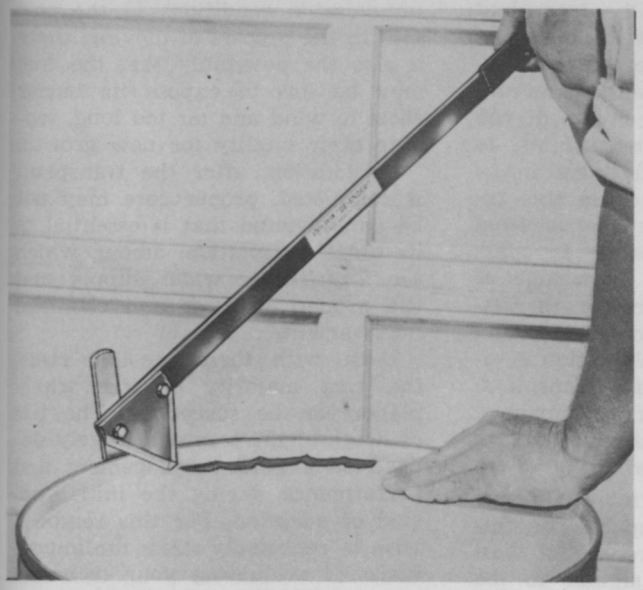


ELECTRIC CHAIN SAW: John Deere & Company, Moline, Ill.

"Chained Lightning" is how the manufacturer describes this new model 7 electric saw. The compact unit has a 12-inch guidebar with chrome plated cutting edges. Saw construction uses ball bearings throughout for smoother, longer-lasting operation. All wire connections are welded, instead of soldered, to withstand high heat. If noise and pollution requirements are a factor in your operation, this saw is the answer. For more details, circle (703) on the reply card.

M-418 TRENCHER: Vermeer Manufacturing Co., Pella, Iowa

This trencher is equipped with an 18 hp, air-cooled engine, power steering, 4-wheel drive and a choice of flotation or traction tread tires. It will dig up to 12 inches wide, down to 60 inches deep, with four chain speeds forward, plus reverse. Dual augers may be raised or lowered to handle spoil close to the trencher or sweep it to the sides. Hydraulically-operated five foot backfill blade may be raised, lowered, or angles 30 degrees left or right. It features a replaceable alloy steel grader edge. Other attachments include a rear-mounted vibratory plow and an easy-to-mount auger boring tool that attaches to the backfill blade. For more details, circle (704) on the reply card.



DE-ENDER: C. & I. Manufacturing, Inc., Warsaw, Indiana

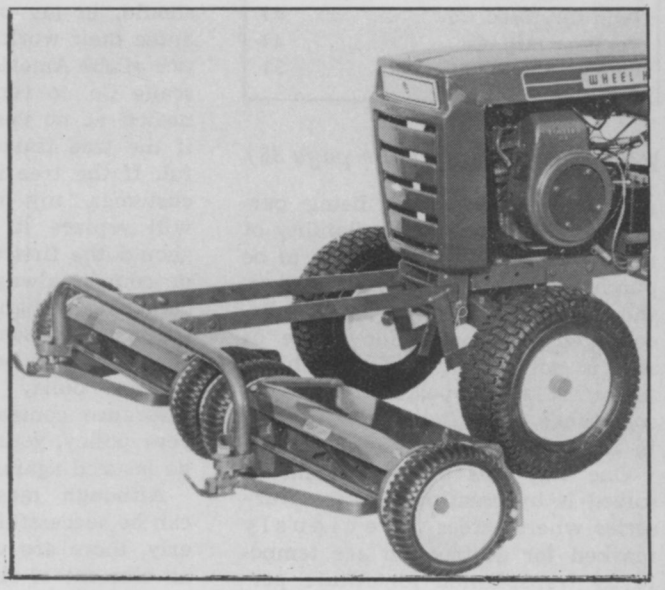
Remove drum heads the easy way with this heavy-duty, metal drum cutting tool. It eliminates unsafe uses of chisels or torches. Sturdy construction and low cost blade replacement provide a tool that cuts any size drum, and gauge of metal, to convert drums into reusable containers. For more details, circle (705) on the reply card.

ROTARY VACUUM SHREDDER/BAGGER: MTD Products, Inc., Cleveland, Ohio

SHRED-IT is a powerful 5 hp shredder/bagger that consumes all organic materials including branches up to 2 inches in diameter. It's designed for the organic gardener and the ecology buff who has a growing interest in compost. Hopper size is 19¼ inches square. It has a drop chute for rake feeding, a special 2½-inch by 5-inch chipping chute, nylon mesh bag with patented slip-proof slide locks to accommodate a disposable plastic liner, and a 3-stage cutting action blade and hammer knives. It's portable. Moves around like a wheelbarrow on rubber tires and steel wheels. For more details, circle (706) on the reply card.

TURF CARE SPREADER: Avco Ezee Flow, Coldwater, Ohio

Here's a spreader designed for smaller areas of turf care—industry, estates, etc. It features a 54-inch spreading width and has a hopper capacity of 7.7 cubic feet or 500 pounds. Model 105 can be pulled by conventional tractors or the subcompacts with 10 hp or more. Superintendents of smaller courses will like the patented cam agitators which force material through the ports in the hopper bottom to assure accurate metering. An exclusive feed rate control permits exact control of spread rate. The spreader is ideal for spreading ice control materials in the winter and dust control chemicals at other times. For more details, circle (707) on the reply card.



FRONT-MOUNTED MOWER: Roxy-Bonner, Inc., Huntingdon Valley, Pa.

Model UM21-3W easily mounts on the front of small utility and garden tractors. Mowers up front help eliminate wheel tracks. Unit is highly maneuverable, swinging in and out around shrubbery. Visibility is excellent. Mower cuts a 56-inch swath. It is made of heavy cast iron construction with steel rollers. Available also is a unit for drawbar pulling in the rear which cuts a 90-inch swath. For more details, circle (708) on the reply card.

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INSTANT SHADE*(from page 38)*

more transplants from being performed is the lack of availability of mature trees. If the trees are to be purchased from an outside source, the potential transplant may be discouraged if a particular specie or size is not found. The availability factor is an important one, and sometimes necessitates compromises in the selection of specie and size.

One way this problem could be solved is by creating *Holding Nurseries* where trees previously marked for destruction are temporarily transplanted for future permanent transplants. A minimum amount of maintenance is required for such a *Holding Nursery* and thus the endeavor becomes economically practical.

Of course, some care must be taken in selecting a site for the *Holding Nursery*. Availability of water and a good access road are just two points that contribute to the economic practicality of such a venture.

To find a reliable source that can successfully perform the transplant can be another problem. There just aren't that many companies who specialize in transplanting mature trees. That's why we invite anyone interested in tree transplants to write or call us for additional information. A service such as this requires sophisticated, specialized equipment and the skills to operate them. Extensive knowledge of trees, including their growth patterns, vulnerability to diseases and adaptability to transplantation is essential for a successful transplant. This knowledge must accompany a company's service if the mature transplant is to succeed.

How can you determine if a particular source is capable in this field? Ask for references of past jobs that might be similar to the one you're considering. Call the greenskeeper at a local country club. Ask a landscape designer. Discuss requirements with as many sources as possible, then compare recommendations and cost estimates. And don't be afraid to use the phone—call out-of-state sources for further comparisons. **Checking out a source costs very little. Poor judgement in transplanting could cost much more, so be thorough!**

If a company is reliable and has confidence in themselves they should, in my opinion, fully guarantee their work. It's been the practice of the American Tree and Landscape Co. to replace any tree furnished at no cost to the customer, if the tree transplant is unsuccessful. If the tree is furnished by the customer, my company generally will replace it at a reduced cost should the first tree die. There are, of course, always extenuating circumstances—lightning or hurricanes for instance. Some of these unusual conditions can be covered by an insurance policy with your present insurance company. In fact, check your policy, your trees may already be insured against such misfortunes.

Although most tree transplants can be successful if performed properly, there are variables that bring an element of risk into the picture. It is always critical that the variables be recognized and controlled. One must realize that in transplanting a tree he is putting it through a traumatic experience. From a heavily shaded area, the tree might be moved to an open, sunny and windy area. A tree grown in a protected area is not as hardy as one that has been fully exposed to weather elements. Thus, the bark may split soon after the transplant. The root system may likewise find unfavorable conditions in the new soil. In the process of moving, there is also the possibility that the tree may be left to expose its tender roots to wind and air too long, sapping their vitality for new growth.

In addition, after the transplant is completed, proper care may not be administered that is essential to its initial adaptation, among which are a sufficient water supply and the proper fertilizer and chemical nourishment.

Even with these possible risks, the vast majority of tree transplants can be successful. The life or death of the tree will largely depend on a person's judgement and performance during the initial period of adaption. For this reason I wish to repeatedly stress the importance of evaluating your technical source critically.

Sophisticated Irrigation System Designed Around Scarce Water

Perhaps the most sophisticated irrigation system ever designed for a golf course is being installed at the Castle Harbor Golf Course in Bermuda by Larchmont Engineering and Irrigation, Inc. of Lexington, Mass.

Due to the scarcity of water on the Island, Joseph C. Tropeano of Larchmont Engineering spent two years studying the response of the turf to various applications of water and rainfall. He observed that turfgrass responded very quickly to a very small amount of precipitation, especially at night.

A special system was designed which gave the greens first priority followed by the tees and then the fairways.

A unique timing system enables Castle Harbor to select landing areas to make the best possible use of water where it is most needed.

And in order to accomplish this remarkable feat, a Johns-Manville binar system was selected because this system had the greatest flexibility to meet with the requirements of Larchmount Engineering.

Irrigation is done at night when the soil cools down to elimate surface evaporation and evaporation of the water while in its trajectory stream.

Night watering enables the moisture to soak into the root zone before the wind and sun has an opportunity to evaporate it.

Larchmont Engineering and Irrigation, Inc. feels that this concept in water conservation can be duplicated all over the world.

insect report

TURF INSECTS

BLUE GRASS BILLBUG

(Sphenophorus parvulus)

IDAHO: Infested lawns in Twin Falls, Twin Falls County, and in Payette, Payette County. Infestations apparently spreading.

CHINCH BUG

(Blissus leucopterus leucopterus)

NEW HAMPSHIRE: Completely destroyed some lawns in Durham area, Strafford County.

SOD WEBWORM

(Pediasis mutablilis)

COLORADO: Adults ranged 5-10 per square yard on grasses in Fort Collins area, Larimer County.

INSECTS OF ORNAMENTALS

EUROPEAN EARWIG

(Forficula auricularia)

MICHIGAN: Several adults collected near residence in Benzonia, Beulah County. This is a new county record.

SPIDER MITE

(Eurytetranychus buxi)

PENNSYLVANIA: Adults collected on *Buxus* sp. in Harrisburg, Dauphin County, July 26. This is a new state record.

TREE INSECTS

BLACK TURPENTINE BEETLE

(Dendroctonus terebrans)

ALABAMA: Infested numerous pine trees on lawns and in timberland following damage by lightning, construction equipment, and other damage in Mobile and Baldwin Counties.

LARGER ELM LEAF BEETLE

(Monocesta coryli)

GEORGIA: New infestations found in Morgan, Monroe, and Butts Counties. Many elms infested along 25-mile front in 10 lower Piedmont counties from Spalding County to Lincoln County; defoliation usually 100 percent. ALABAMA: Many large elms along 4 creeks in Elmore County defoliated.

SMALLER EUROPEAN ELM BARK BEETLE

(Scolytus multistriatus)

CALIFORNIA: Infested Chinese elm trees at rate of 96 per limb at Poway, San Diego County.

PINE TUSSOCK MOTH

(Dasychira plagiata)

MINNESOTA: Mostly pupae in northern Pine County; adults emerging. High percentage of pupae parasitized or diseased. Very few egg masses found as of August 2.

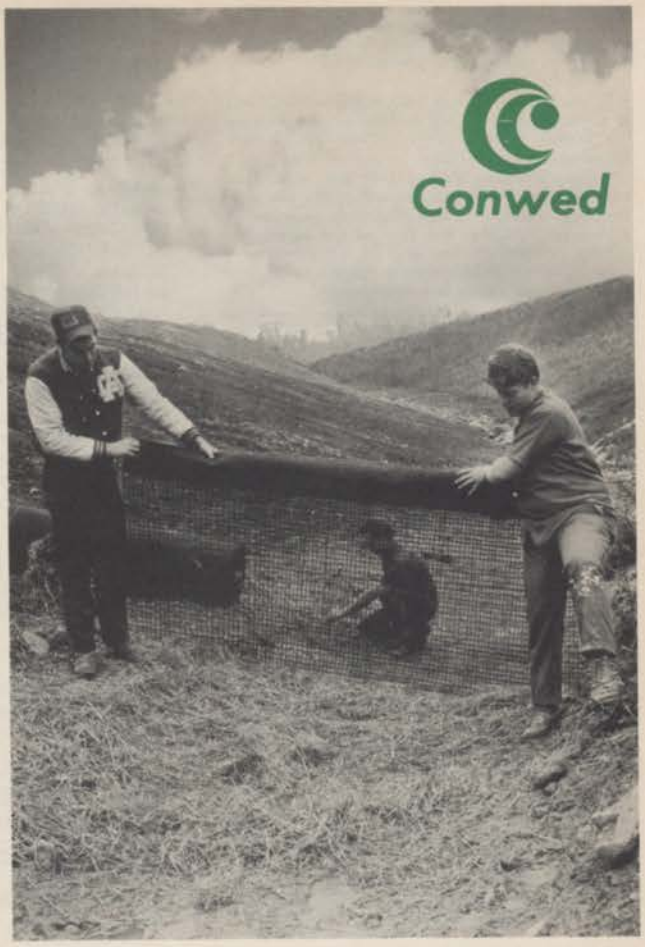
SPRAY SERVICE FOR SALE

- 1500 gallon stainless steel tank divided into three 500 gallon tanks.
- Three reels, hoses and guns with electric forward and reverse reel.
- Economical four cylinder diesel to run 80 gallon per minute pump.
- Double plumbed for separate pump.

Four times per year contracted customer route, located in west Portland, Oregon. Will continue in pruning and shaping business, but will work closely with the spraying operation for buyer. Will consider working partner. Asking $55,000; Terms.

Write or call: **Bill Bailey**

P.O. Box 25273, Portland, Oregon 97225 (503) 292-6363



Reduces erosion quickly and cleanly

Conwed® Erosion Control Netting

Write for the facts. Learn how this strong, lightweight plastic netting applied over loose mulch or sod reduces erosion in the toughest spots—ditches, cuts and steep hills.

Easy application—2500' rolls available in 7½', 12' and 15' widths. One large roll covers up to an acre. Conwed Erosion Control Netting slowly disintegrates on the ground.

Your request will also bring you information about Conwed's complete line of other turf establishment products. Write now to: Conwed Corporation, Dept. WTT-102, 332 Minnesota Street, St. Paul, Minnesota 55101.

Conwed CORPORATION

For More Details Circle (116) on Reply Card

— classifieds —

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10¢ per word, minimum $3.00. All other classifications 20¢ per word, minimum $4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Boldface rule box: $25.00 per column inch.

SEEDS

SOD QUALITY MERION SEED for discriminating growers. Also Fylking, Delta, Park, Newport, Nugget and Pennstar bluegrasses as well as fine fescues. We will custom mix to your specifications. Michigan State Seed Company, Grand Ledge, Michigan 48837. Phone 517 627-2164.

MISCELLANEOUS

TREE APPRAISALS, SURVEYS, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact: Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

LANDSCAPE DESIGN KIT 37 rubber symbol stamps and ink pad, postpaid $25.00 C.O.D. $26.00 plus postage. Order direct or brochure sent. California add tax. T-Gordon's, Box 741T, Reseda, Calif. 91335.

USED EQUIPMENT

FULL LINE OF USED TREE equipment for sale. We accept trade-ins and buy used tree equipment. New service available for northern Ohio. We now rent skyworkers, tree spades, brush grinders, 84' National crane, stump grinders and wood splitters. Edwards Tree Service, 3190 Cooper Foster Park Road, Vermilion, Ohio 44089. Phone: 216 967-6750 or 933-6750.

FOR SALE

DOUBLE EDGE sod cutter blades. Will fit any Ryan sod cutter. Works like double edge razor blade. Cuts much more sod per blade. Made to bolt on both ways. $24.00 plus postage. New automatic sod loaders for direct loading to pallets, trucks or trailers. No workers needed on ground. Both products developed and designed by Hadfield. Write or call Glen Hadfield, 4643 Sherwood, Oxford, Michigan 48051. Phone 313 628-2000.

CHAIN SAW CHAIN, bars, sprockets, sharpening equipment, saw parts and accessories. Save to 40%. Professional quality, fully guaranteed. World's largest mail order supplier of this equipment. Free catalog. Write Zip-Penn, Box 43073-A68, Middletown, Ky. 40243.

THE GOLD ONES from D. J. Andrews, Inc., Stump cutter teeth, pockets, and bolts. Top quality and best price in the U.S.A. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230 or 716 436-1515.

HELP WANTED

DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc., and you have our story. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

USED EQUIPMENT

WANTED: Spray pump and truck to rent two weeks before Memorial Day, 1973, with at least 50 GPM and 600 gallon capacity, along with operator. Will pay $1,000 to $1,500 plus the labor costs. Contact Tamke Tree Experts, Inc., Box 571, Bernardsville, N.J. 07924. Phone: 201 766-1397.

TM-700 TREE MOVER, like new condition; manuals and extra parts. Parsons Tree Service, 5628 Maxine Court, Alexandria, Virginia 22310. Phone 703 971-3998.

GIGANTIC
Equipment & Chemical
DIRECTORY
December WTT

This harvester works anywhere

Unlike other harvesters, the Nunes Mechanical Sod Harvester is guaranteed to work wherever cultivated sod is grown.

Hydraulic controls permit quick and easy adjustment to different field. terrain, soil and sod conditions **while in operation.**

With the Nunes Harvester, you can cut, lift, roll (or slab) and palletize more than 1000 sq. yards of sod per hour.

Roll or slab units are interchangeable and the machinery handles rolls or slabs 12 to 20 inches wide (24-inch width machines on special order.)

Special discounts are available on signed orders, with deposits, received before December 15.

Also available are vacuum sweepers designed especially for sod.

Write for detailed brochures and additional information.

Nunes Manufacturing Company
2006 Loquot Ave., Patterson, Calif. 95363
Phone (209) 892-8776

NUNES
SOD HARVESTER

—trimmings—

TRITON CS-7 agricultural spreader-binder is detailed in a new brochure from Rohm and Haas Company. When added to various sprays, it promotes better spray distribution and retention and helps rewet and respread the spray deposits without product loss. It also aids in mixing of wettable powders and liquid chemicals in tank-mix combinations. For a copy of the new brochure, write Rohm and Haas Company, Independence Mall West, Philadelphia, Pa. 19105.

HYDRILLA HIDEOUT was recently discovered in Florida's Lake Okeechobee, reports Robert D. Blackburn. He and his staff at the USDA Agricultural Research Service station in Ft. Lauderdale, have found that in spite of active isolation and quarantine programs, hydrilla has "holed up" in the big Florida lake. If permitted to gain a significant foothold, this weed could disrupt the aquatic environment of this shallow-bottom lake, Blackburn said.

CONSUMER ALERT is the word from the Georgia department of human resources. They say a double infestation is moving through Georgia pine trees. Officials are cautioning property owners about the dangers caused by the southern pine beetle, and they are also sounding a danger signal about unscrupulous "tree doctors" who are pretending to cure the sick pines—usually unsuccessfully, but always at exorbitant cost. Georgia forestry commission director Ray Shirley says that an unusually severe invasion of beetles is damaging pine trees in the metro Atlanta area and a number of counties south of there. He stresses that self-styled "tree experts" are little more than confidence men, and will possibly do more harm than good in applying their remedies.

DOZING AT THE WHEEL is by far the most frequent cause of interstate truck and bus accidents where the physical condition of the driver is involved, says the Federal Highway Administration's bureau of motor carrier safety. In 400 accidents, 76 percent of the drivers fell asleep at the wheel. Use of alcohol was the second largest cause of accidents. Eleven percent of the 400 accidents were attributed to drinking. Other physical conditions found in the study were heart disease, drug usage, and blackouts.

SOUTHERN PINE BEETLE has built up to explosive numbers in Ashley county, Arkansas. Left uncontrolled, it could virtually wipe out the pine forests of the state. It attacks and kills trees of pulpwood and saw log size. The beetle has caused heavy losses to timber stands in Texas, Louisiana and other southern states for several years. The Arkansas Forestry Commissions is making aerial surveys and issuing written notices by certified mail to landowners where infected pines are found. Owners must initiate control measures within 15 days. These include cutting and marketing infested trees and all pines within a 50-foot radius; cutting and burning of infested trees and all pines within a 50-foot radius; and cutting and spraying with BHC or Lindana in diesel fuel.

NITROGEN FERTILIZERS present no evidence of danger to man, animals or global environment, according to an investigation by the National Research Council. Dr. Charles R. Frink, Connecticut agricultural experiment station and a member of the council's committee that made the study, says that locally excessive levels of nitrogen compounds most commonly occur where wastes contribute nitrates to the ground water. These wastes include municipal wastes, septic tanks and concentrations of animal wastes. Urban runoff and industrial wastes may also add nitrates. Frink says that continued research is needed to find ways of controlling possible entry of nitrogen into waterways from farmlands.

CONGRATULATIONS MR. J. G. PAGE of Walnut, Calif. We just received your reader inquiry card for more information about the International 2444 tractor and 70 flail mower mentioned in WTT August 1969: We're not sure whether this is due to post office error or that you were house-cleaning and noticed this ad in an old issue. One thing for sure, we'll expedite your request. We don't want the grass to get too too tall before you receive an answer.

FIFTY PERCENT of the birch trees in many southern Michigan cities are or will become infected with the Bronze Birch Borer, Michigan State University's Dr. Melvin Loelling estimates. The extension forester says that his beetle is greenish-bronze and invades birch trees planted in locations not native to the tree. Birches prefer the cooler, damper climate of northern Michigan and other northern tier states. Plantings elsewhere are generally subject to more insect and disease problems.

By DR. ROBERT W. MILLER
Assoc. Prof. of Agronomy
Ohio State University

Management Steps For Better Water Use

1. **Mowing Practices**—Lowering the mowing height reduces the efficiency of water utilization. As the height of mowing is lowered the number of roots produced and the depth of the root system is reduced. Higher mowed grasses actually have greater water use rates than low cut grasses but the loss in uptake of water because of poorer root systems more than overrides any advantage of lower mowering. Infrequent mowings also reduces the efficiency of water utilization for the same reasons. The use of a dull or improperly adjusted mower will increase the water use rate of grasses.
2. **Irrigation Practices**—Excessive watering of grasses result in a poor root system, increases the water use rate, and decreases water absorption by the plant.
3. **Fertility Level** — Excessive nitrogen fertilization of turfgrasses stimulates top growth, reduces root growth, increases the water use rate and lowers turf quality.
4. **Turfgrass Pests** — Turfgrasses injured by disease or insects will have higher water use rates than healthy grasses.
5. **Traffic** — Grasses worn by traffic have higher water use rates. Traffic should be managed whenever possible to prevent concentration of traffic.
6. **Soil Aeration**—Grasses grown on poorly aerated soil are inefficient in water utilization. Several management factors mentioned above effect soil aeration. Good management along with the use of mechanical devices for soil aeration will improve water use efficiency.

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